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ANNUAL REPORT

— OF THE —

SECRETARY

— OF THE —

State Board of Health

— OF THE —

STATE OF VERMONT,

— FOR THE —

YEAR ENDING SEPTEMBER 1st, 1891.

RUTLAND:
THE TUTTLE COMPANY, OFFICIAL PRINTERS,
1891.

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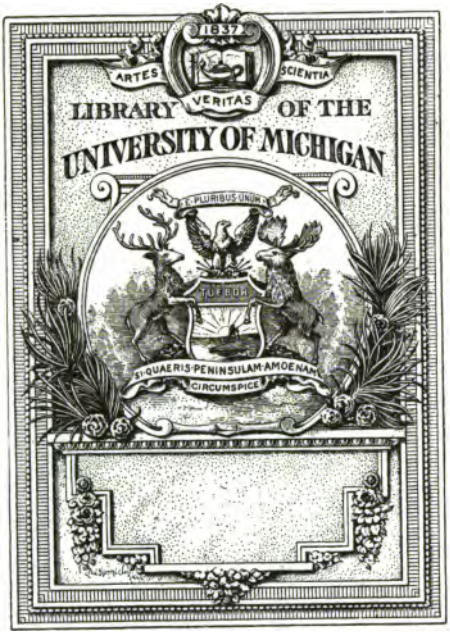

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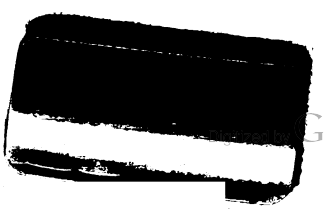
Board of Health.



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FIFTH

ANNUAL REPORT

—OF THE—

SECRETARY

—OF THE—

STATE BOARD OF HEALTH

—OF THE—

STATE OF VERMONT

—FOR THE—

Year Ending Sept. 1st, 1891.

RUTLAND:
THE TUTTLE COMPANY, OFFICIAL PRINTERS.
1891.

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STATE BOARD OF HEALTH.

OFFICE OF THE SECRETARY,
RICHFORD, September 1st, 1891.

To His Excellency,

C. S. PAGE, *Governor.*

SIR:—I have the honor of submitting to you the Fifth Annual Report of the State Board of Health for the year ending September 1st, 1891.

Very respectfully,

J. H. HAMILTON, *Secretary.*

MEMBERS OF THE BOARD.

	Term Expires.
DR. C. S. CAVERLY, Rutland, - - -	1896.
DR. J. H. HAMILTON, Richford, - - -	1894.
DR. O. W. SHERWIN, Woodstock, - - -	1892.

OFFICERS OF THE BOARD.

DR. C. S. CAVERLY, *President.*
DR. J. H. HAMILTON, *Secretary.*

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No. 93.—AN ACT TO PREVENT THE SPREADING OF CONTAGIOUS DISEASES AND TO ESTABLISH A STATE BOARD OF HEALTH.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The governor, by and with the advice and consent of the senate, shall appoint three persons as members of a State Board of Health for the State of Vermont. The term of office of said members of said board shall be so arranged that the term of one of them shall expire at the end of every second year. Vacancies in said board shall be filled as they occur by appointment of the governor, and confirmation by the senate when next in session.

SEC. 2. The members of said board first named in said appointment shall call a meeting of said members immediately after notice of said appointment shall be received by said members, and said board shall meet within six days after said notice, at the time and place designated in said call, and said board shall organize by electing one of their number to be president of said board, and the board shall also appoint a secretary, who shall be a reputable practicing physician of this State, and if not one of the members of said board by appointment he shall be a member of the board by virtue of his appointment of secretary. The said secretary shall hold his office until said board shall appoint another secretary, and he shall be the executive officer of said board of health.

SEC. 3. The board shall take cognizance of the interests of life and health among the inhabitants of the State; shall make or caused to be made sanitary investigations and inquiries respecting causes of disease, especially of epidemics, and the means of prevention; the sources of mortality and the effect of localities, employments, habits, and circumstances of life on the public health. They shall also, when requested, or when in their opinion the sanitary interests of localities require it, advise with municipal officers with regard to the location, drainage, water supply, heating and ventilation of public buildings and the drainage and sewerage of towns and cities.

SEC. 4. The board shall meet biennially on the second Tuesday of the session of the legislature at Montpelier, and at such other times and places as in the judgment of the board the public health may require, and also whenever the public safety of the people or the stock and domestic animals of the State shall require. The secretary, as executive officer of the board, shall superintend the performance of the work prescribed in this act, and shall perform such other duties as the board shall direct. He shall also respond to the invitations of boards of selectmen of the several towns, or the mayor of a city, in case of epidemics, contagious diseases or

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other unusual sickness, by visiting the locality, or in such other ways as may be deemed best; he shall render the secretary of state any necessary assistance in preparing for publication the annual registration reports. as required by law, relating to births, deaths and marriages in the State, and he shall make report to the governor on or before the first day of September in each year of the investigations, discoveries, and recommendations of the board, which report shall be printed and distributed as soon as practicable thereafter in the same manner as other public documents of the State.

SEC. 5. The compensation of members of the board shall be five dollars per day and actual expenses while in the discharge of their official duties, and the governor and auditor of accounts may allow to the secretary of said board such additional sums for services as secretary, or for services in times of extraordinary peril, as seem to them reasonable, provided the whole expense of the board, including the secretary for services rendered and all expenses incurred, shall not exceed one thousand five hundred dollars in any year, except in some extraordinary public peril, in which case the governor may order said board to do and perform service for the safety of the State and her people in excess of said sum, but never to exceed the sum of two thousand five hundred dollars in all in any one year.

SEC. 6. This board shall have authority to promulgate and enforce such regulations for the better preservation of the public health in contagious and epidemic diseases as they shall judge necessary; and any person or persons or corporation neglecting or refusing, after having been duly notified in writing, to comply with the requirements of such regulations shall upon conviction thereof, pay to the treasurer of the State a fine of not less than twenty-five dollars nor more than one hundred dollars, said offense to be prosecuted for before any court of competent jurisdiction in the State.

SEC. 7. This act shall take effect from its passage.

Approved November 23, 1886.

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GENERAL REPORT.

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This report comprises the work of the State Board of Health for the year ending September 1st, 1891.

These reports are issued each year for the purpose of enlightening the people of the State upon the various topics of sanitation, and to give in a general way an idea of the work performed by the Board.

It is a work closely connected with the welfare and happiness of the individual, family, community and State. Its aim is not only the saving of human life, but the preservation of health and the prevention of disease with its long train of misery, suffering, and disability. Its object is to give as far as possible to every individual in the community a fair and equal chance for life and health.

In this "government of the people, by the people and for the people," good, effective, paying work cannot be performed by the Board of Health unless the people are made to see and understand that this work is needed and that it is worth doing and paying for.

A case of glanders or a supposed case of pleuro-pneumonia will arouse a community to a state of great excitement—their property is in danger. The cattle commission is at once summoned for advice and assistance. Why is this? It is because they have been made to understand that these diseases are contagious and that they may, however, be restricted by proper care.

When the people of the State can be brought to appreciate the fact that diphtheria, scarlatina, etc., are as contagious and as dangerous to the life and health of mankind and that equal precautions will effect equally good results in prevention, then and not till then will they be equally vigilant to hinder the spread of these and kindred diseases.

The State Board of Health is not able to carry on the work of sanitation unaided. It is expected of the people that they will at least inform themselves upon this question, which is so intimately connected with their welfare and happiness.

The Board is also very naturally looking to the medical profession for their coöperation in this work. Very much depends on the

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physicians of the State whether success attends the efforts of the Board in carrying forward the work. Indifference on the part of the family physician means indifference of the family.

There are very many intelligent members of the profession who are doing all in their power to prevent the spread of infectious and contagious diseases, ever ready to report to Health Officers and to comply with all the rules and regulations of the State Board, while there are too many who are not only indifferent but rather hinder by word and deed the work of sanitation. The latter class, however, is becoming each year smaller.

STATE REGISTRATION REPORTS.

The laws require the collection yearly of vital statistics by school district clerks, and the tabulation, compilation, etc., of these statistics by the Secretary of State.

This is so evidently a farce and useless expenditure of money that it ought not to longer pass unnoticed. The statistics which have been gathered during the past 35 years that this law has been in force would now be invaluable if they were trustworthy. The last report issued is for the year 1889. According to it there were more deaths than births in many of the larger towns of the State, and in three counties—a thing that is hardly credible even in places with a diminishing population. A comparison of Table IV and Table V with reference to the "causes of death" shows many singular discrepancies. One gives the number of deaths from diphtheria 229; the other 203. One has 133 deaths from typhoid fever, the other 149. One mentions "bilious fever," "brain fever," "gastric fever," "lung fever," as causes of death, the other does not contain these names. One has 231 "stillborn," the other 213. One has 4 deaths from mumps, the other 1. And indeed it is hard to find an instance in which the two tables harmonize. On page 101 the whole number of deaths is given in one line as 5514 and in another 5429.

These discrepancies are evident from a casual glance at the report. I do not know that the report for 1889 is in anywise exceptional in respect to inaccuracies, but it is probably not. Such reports, while they may fulfill the formal requirements of the law, are almost valueless as reliable statistics for reference. Most States require the statistics of births and deaths from physicians and put the matter of compiling them in the hands of their Boards of Health. That some change in reference to the matter is needed in our State is patent to every one who has occasion to consult these statistics.

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SPECIAL REPORT.

The people of the State are to be congratulated on a year of general good health. "La grippe" has continued to prevail to quite an extent and has increased somewhat the death rate. Measles has been unusually prevalent, but as reports show, with very light fatality. Diphtheria, the disease of all others most to be dreaded, has appeared in several towns of the State and has been the cause of many deaths. Yet the fact remains that the State never was so free from contagious diseases and other forms of disease to a great extent preventable.

These diseases have been managed with far greater care and precaution than ever before—preventive measures have been enforced and by the prompt action of the local boards of health such diseases have been hindered from spreading in communities where they have appeared.

NUISANCES.

This office is receiving frequent communications from Health Officers and also from other citizens relative to nuisances.

This is a matter of great importance and the questions asked as to points of law concerning them can be answered in one way only, viz.: "that the matter rests wholly with local boards of health." While local boards have sufficient power in the abatement of nuisances it is too often the case that either from fear of giving offense, indifference or ignorance of the law, nothing is accomplished in this direction. To obviate this the State Board of Health should be given the same power as the local.

Everyone in this enlightened age knows that it pays to look after the environments of their homes and that the health of communities depends largely on the interest taken and work performed in securing pure air, pure water, and pure soil. Individual effort is not sufficient for this work.

"You may keep your own house and dooryard clean and dry and allow nothing to pollute the air or water, yet your neighbors may sin against every precept of the laws of health, and may render your precautions of no avail. Hence it follows that the State must take the matter in hand," and by all acting as one, secure the results so much to be desired.

SLAUGHTER HOUSES.

Section 3923, Chapter 1731, Revised Laws, reads as follows: "No person shall carry on the business of butchering without the approbation, in writing, of the Board of Civil Authority, describ-

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ing the building and limiting the time during which such person shall carry on such business; and if a person carries on such business without such approbation after the expiration of the time so limited, he shall forfeit not more than five hundred dollars." The Board of Civil Authority may under this act license a nuisance, and most of the slaughter houses of the State are so conducted as to render them such.

Frequent complaints are made to the State Board of Health as to the location of slaughter houses and their filthy condition. In some cases an inspection has been made.

Connected with nearly every slaughter house is a pen of hogs which are fed on the blood, intestines and other offal, this constituting their chief diet and it is upon this that they live, grow, and are fattened.

Can one imagine anything more repulsive than pork fed on the offal of a butcher's shop; their daily drink is blood and their food the entrails of their slaughtered companions.

Dog meat is quite as good in point of cleanliness.

"Again," says R. Harvey Reed in the summing up of a report on this subject, "imagine a hog pen with all its natural odors, to which is added the fragrance of decomposing blood and flesh on one side, a pile of odoriferous bones on the other, the soil underneath seething with putrefying organic matter and the room itself ornamented with decaying meat, as were actually the fact in some of these shops; and then imagine such a place to kill and cool the animals from which you obtain your choice roasts and tender steaks, which must hang for hours in this fragrant atmosphere while cooling or waiting transportation to market, and you have a faint picture of the average butcher shop and the atmosphere our meat enjoys prior to its journey to the frying pan."

A better picture could not be drawn of some, yes, many of the slaughter houses in this State.

DRINKING WATER.

The Board has issued a circular entitled "Pure water and how to secure it." The question of water supply is second to no other in a hygienic point of view, since so many serious evils result from the use of bad water taken from wells which receive the drainage of houses and outbuildings. This is a matter which more than ever is interesting the people of the State. Many of the larger towns are putting in a public water supply and abandoning the use of wells.

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The water supply of some of these towns is of doubtful purity. Water forced from a river which is the receptacle for sewage is not only unwholesome but unsafe as drinking water.

The city of Burlington receives its water supply from Lake Champlain, into which also is discharged the sewage of the city.

LOCAL BOARDS OF HEALTH AND HEALTH OFFICERS.

Selectmen, by virtue of the duties assigned them by the laws of the State, are Boards of Health for towns and also for incorporated villages, unless the charter provides for a health department.

The State Board of Health has urged upon the selectmen the necessity of organizing as local boards of health and for this purpose has prepared rules and regulations for their adoption. These are to be signed by both State and local boards.

The Board has also requested the selectmen to appoint some medical man as health officer, whose duty should be to give general advice in sanitary matters and also to aid the State Board in obtaining statistics and information of interest and importance to the State.

There has been but little opposition to this work and the rules and regulations have been complied with and frequent applications have been made to members of the Board for blanks for organization and appointment of health officers.

CONSUMPTION.

Consumption is one of the greatest evils of life in our State. It is responsible for more than fifteen per cent of all deaths recorded.

Since the investigations of Koch and his predecessors, little doubt remains as to the infectious and contagious character of consumption, and it is in the same catagory as leprosy and glanders.

Taking this view of it the State Board of Health has issued a circular entitled, "The Nature and Prevention of Consumption," which will be found in this report.

DIPHTHERIA.

With the exception of consumption, diphtheria is the cause of more deaths in the State than any other disease.

Nearly eighty-five per cent of the children dying from diphtheria were under ten years of age.

It is much more to be dreaded than small-pox because there is no such effective means of prevention as vaccination.

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There has not been a case of small-pox in the State during the year, while in only three towns there have been three hundred cases of diphtheria with one hundred deaths.

Had it not been for the sanitary precautions, there would undoubtedly have been more than three times the number of cases and deaths. The State Board of Health has been called on in many cases to aid local boards in their work of checking and stamping out this dread disease. In many cases very summary means have been employed, quarantines have been established, quarantine hospitals recommended and in some instances special police appointed at the request of the Board to make this quarantine more effectual.

The following extract from the report of the Secretary of the Michigan State Board of Health shows how the same work is regarded there :

RECENT SAVING OF LIFE IN MICHIGAN.

In a carefully prepared paper, read before the Sanitary Convention at Vicksburg, the proceedings of which are published, Dr. Baker gave official statistics and evidence which he summarized as follows :

"The record of the great saving of human life and health in Michigan in recent years is one to which, it seems to me, the State and the local boards of health in Michigan can justly 'point with pride.' It is the record of the saving of over one hundred lives per year from small-pox, four hundred lives per year saved from death by scarlet fever, and nearly six hundred lives per year saved from death by diphtheria—an aggregate of eleven hundred lives per year, or three lives per day saved from these three diseases! This is a record which we ask to have examined, and which we are willing to have compared with that of the man who 'made two blades of grass grow where only one grew before.' "

FIRST OR REGULAR MEETING.

In accordance with the provisions of section 4 of the act establishing a State Board of Health, the regular meeting was held in the Board of Health rooms, Montpelier, the second Tuesday of the session, October 14th, 1890. The first and principal business was the consideration of the defects in the present law relating to the State Board of Health.

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After much discussion, a bill was drafted, which was thought, in a measure, to give the Board more power, and thus enable it to do better and more effective work for the State.

This bill was introduced into the Senate by Senator Stevens of Franklin County, referred to the Committee on Public Health and passed by the Senate.

Reported favorably to its passage in concurrence and the third reading thereof was refused by the House. The bill is herewith appended.

AN ACT FOR THE PRESERVATION OF PUBLIC HEALTH AND IN AMENDMENT OF THE STATUTES RELATING THERETO.

It is hereby enacted by the General Assembly of the State of Vermont:

SECTION 1. The Selectmen of each town, and the Board of Aldermen in each city in this State, shall annually appoint, in the month of March in each year, a Health Officer for said town or city, who shall be a physician in the regular practice of his profession in said town or city and a resident therein, if there shall be any person residing therein eligible to said appointment. If there is no resident practicing physician in said town or city, any physician whose regular practice extends into said town or city may be appointed. Said appointment shall be made within thirty days after this Act takes effect, and in the month of March in each year thereafter, and such Health Officer so appointed shall hold office until his successor is appointed. In case of a vacancy in the office of Health Officer, by death, removal or resignation, the said vacancy shall be filled by a new appointment within thirty days from the time such vacancy shall occur. If the Selectmen of any town or the Aldermen of any city shall neglect or refuse to appoint a Health Officer, as required by this Act, or fill any vacancy therein, the State Board of Health shall make said appointment or fill said vacancy. A record of the appointment of a Health Officer shall be made in the office of the Town or City Clerk.

SEC. 2. Sections 3919, 3920, 3921, 3922, 3924 and 3925 of the Revised Laws are hereby amended by striking out the word "Selectmen," wherever the same occurs in each of said sections, and inserting the words "Health Officer" wherever the word "Selectmen" is so stricken out. The State Board of Health shall have all the authority and powers throughout the State as are granted by this statute to Health Officers in their respective towns.

SEC. 3. The Health Officer of each town or city shall make sanitary inspections whenever and wherever he has reason to believe and does believe anything exists in his town or city that may be detrimental to the public health. He shall, upon receiving notice of any case of infectious or contagious disease, dangerous to the public health, investigate the same, and determine, if possible, the

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source or cause of the disease, and shall institute such means of prevention and restriction as shall be necessary, and shall immediately report all the facts to the State Board of Health. Whenever a communicable disease is prevailing to any considerable extent, he shall make to the Secretary of the State Board of Health weekly reports concerning said disease during its continuance. In the month of March in each year each Health Officer shall also make to the Secretary of the State Board of Health a full report of the sanitary condition and public health of his town and of his doings during the preceding year.

SEC. 4. If diphtheria, scarlet fever or any infectious or contagious disease exists in any town, the Health Officer shall have the same powers and authority as regards isolation and quarantine as is now provided by law in case of small-pox.

SEC. 5. In case the Health Officer or any member of the State Board of Health shall isolate or quarantine any person or persons, or their families, who are supposed to be suffering from some infectious or contagious disease, they shall furnish suitable provisions for their care and medical treatment at the expense of the town in which such persons reside.

SEC. 6. Section 4 of Act No. 93 of the Acts of the General Assembly for the year 1886, entitled "An Act to prevent the spreading of contagious diseases and to establish a State Board of Health," approved November 23, 1886, is hereby amended so as to read as follows:

The Board shall meet biennially, on the second Tuesday of the session of the Legislature at Montpelier, and at such other times and places as, in the judgment of the Board, the public health of the people of this State shall require. The Secretary, as executive officer of the Board, shall superintend the performance of the work of the Board prescribed in this Act and shall perform such other duties as the Board shall direct. He shall attend, on the invitation of the Health Officer of any town or city, in case of epidemics, contagious diseases or other unusual sickness, and take such measures in respect thereto as he shall deem best. He shall receive the reports of Health Officers concerning infectious and contagious diseases and take action upon them as may be necessary. He shall also receive the annual reports of Health Officers and shall make report to the Governor on or before the 1st day of September in each year of the investigations, discoveries and recommendations of the Board, and shall embody therein so much of the reports of Health Officers as he shall deem for the public interest. Section 5 of the same Act is also amended by striking out the words "one thousand five hundred dollars in any year," and inserting in their place the words "three thousand dollars in any biennial term."

SEC. 7. The Secretary of the State Board of Health shall prepare and send to Health Officers suitable blanks upon which to return to him reports of infectious and contagious diseases, and also blanks for physicians to make reports to Health Officers, and

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shall include therein questions to be answered, when necessary to give said Secretary the information he desires, and in special cases the Secretary may require special information of a Health Officer not provided for in the blanks so furnished.

SEC. 11. Any householder in whose residence there occurs a case of infectious or contagious disease of a character to be dangerous to the public health shall immediately give notice thereof to the Health Officer. Any physician who attends professionally a person having a communicable disease dangerous to the public health shall at once report to the Health Officer all he knows or has discovered about said disease. Any householder or physician failing to give timely notice to the Health Officer of the existence of such disease shall be subject to a fine of not less than ten dollars.

SEC. 8. The bodies of persons having died of small-pox, Asiatic cholera, typhus fever or yellow fever, as soon as the evidences of death are conclusive, shall be wrapped in a sheet saturated with a solution of a half pound of chloride of zinc in a gallon of water, or a solution of bichloride of mercury of not less than two per cent strength, and be enclosed in a proper coffin or box and be buried immediately, with as little publicity as possible. Such bodies shall not be allowed to be put in any hearse or public vehicle, and shall not be moved to any place in this State, except the place of burial, and no such body shall be allowed to be brought into this State from any place without the State.

SEC. 9. The body of any person who has died with diphtheria, scarlatina, typhoid fever, erysipelas or other infectious or contagious disease (except those enumerated in section 8 of this Act), dangerous to public health, shall be prepared in the same manner and buried with as little delay and publicity as possible. The bodies specified in this section may be removed or transported in this State when prepared as provided in section 8, and incased in an air-tight casket and enclosed in a strong wooden box, with the space between the casket and box filled with sawdust fully saturated with one of the solutions before mentioned. Provided, however, that such bodies shall not be moved from town to town unless the Health Officer of the town where such person died shall give as certificate in which the cause of death shall be clearly stated, with an affidavit of the undertaker stating how the body has been prepared and encased, and the consent of the Health Officer of the place to which the body is consigned, that the same may be received. Any person violating the provisions of this section or of section 8 of this Act shall be guilty of a misdemeanor, and, upon conviction, shall be sentenced to pay a fine to the Treasurer of the State of not less than ten dollars.

SEC. 10. The duties imposed upon Health Officers by this Act or Statute Law of this State may be enforced by mandamus, and either member of the State Board of Health may apply for the same by complaint or petition in the name of the State.

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SEC. 11. Any Health Officer shall receive from the town or city treasury the sum of fifteen cents for each report to the Secretary of the State Board of Health, one dollar for his annual report, and for all other services such sum as the Selectmen of his town shall consider just and reasonable.

SEC. 12. All Acts and parts of Acts inconsistent with this Act are hereby repealed.

SEC. 13. This Act shall take effect from its passage.

SECOND MEETING.

Pursuant to a call of the President, the Board met at the Van Ness House, in Burlington, Dec. 3d, 1890. Present: Drs. Chesmore, Caverly and Hamilton.

This meeting was called for the purpose of planning work for the next year. It was finally decided to have at least one meeting in each county, asking the Health Officers to meet with the Board, and thus endeavor to increase the interest in sanitary matters, hoping, also, to pave the way for a State organization, a "State Sanitary Association."

THIRD MEETING.

The Board met at St. Albans, pursuant to a call of the President, Dec. 18th, 1890. A telegram was received from Dr. Caverly saying that he could not be present at this meeting. The other members, Drs. Chesmore and Hamilton, were present; also Drs. Hutchinson, Health Officer of Enosburg, Page of St. Albans and Wilder of Swanton. The prevalence of diphtheria in St. Albans was considered as to its probable cause and the best methods to use for the prevention of its spread.

The subject of diphtheria was also discussed, in a general way, as to its nature, the dangers from the contagion and the duties of local boards of health and of Health Officers in case of an outbreak of the disease.

It was thought best by some of the physicians to have hospitals constructed and insist upon the removal of those suffering from the disease to these "pest houses," especially for those residing in houses so small that isolation would not be practicable.

FOURTH MEETING.

Pursuant to call of the President, the Board met at the Van Ness House, Burlington, Jan. 8, 1891. Present—members of the Board; also Dr. Rutherford, Health Officer of the city, and Drs. Bingham,

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Wheeler, Crandall and Briggs. This meeting was called at the request of some of the physicians of Burlington, to investigate the cause of the prevalence of "gastro enteritis." Dr. Bingham believed it was due to drinking the water from the lake, from which Burlington obtains its supply. He reported many cases of the disease and his patients were sick from ten days to three weeks. Dr. Rutherford did not believe the trouble due to the water; considered the water to be pure; analyses, at different times and under different circumstances, confirmed him in his opinion. Drs. Crandall, Wheeler and Briggs also reported the disease in their practice, with nearly the same history as Dr. Bingham. All admitted that the water caused many to be sick until they had become accustomed to its use. Dr. Rutherford attributed it to the natural condition of the water, the others to impurities. They believed, also, that typhoid fever in Burlington was due to drinking this water. Statistics did not show facts. Dr. Bingham was of the opinion that there were many cases of typhoid fever called by some other name. He did not always expect to find "rose-colored spots." Another fact connected with the question of statistics is that many contract the disease in Burlington and go away to other towns. These cases do not appear in Burlington reports.

The following letter was addressed to Health Officers in some of the larger towns, inquiring as to the prevalence of "gastro enteric" troubles, in order to obtain evidence as to its probable cause in Burlington—whether due to impure drinking water or not:

DEAR SIR:—Will you kindly advise me regarding the prevalence of "gastro enteric" trouble in your locality and whether epidemic or not, noting symptoms, duration, probable cause, etc.

Very truly,

J. H. HAMILTON, Secy.

In the many replies to this letter, only one or two instances were noted of anything like the disease in Burlington, and these lasting only one or two days at longest.

These letters furnished no rebutting evidence in regard to the charges against Burlington's supply, as to its being the cause of "gastro enteritis" in that city.

The complaint of Burlington physicians, who are in a position to know, and of those who first drink the water, together with the fact that the sewage of the city is discharged into the lake inside the breakwater, which is also the source of the city's water supply, compel the Board, without further investigation, to pronounce this water of "doubtful purity."

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FIFTH MEETING.

A vacancy occurred on the Board during the year, caused by the death of Dr. A. H. Chesmore, Jan. 17th, 1891. Dr. Chesmore was elected President of the Board at its first organization, which office he held at the time of his death.

This vacancy was filled by the appointment of Dr. O. W. Sherwin of Woodstock, May 16th, 1891. After Dr. Sherwin's appointment it was necessary to reorganize the Board. Accordingly a meeting was called at the Van Ness House, Burlington, May 21, 1891, for this purpose.

Dr. C. S. Caverly was elected President and Dr. J. H. Hamilton was re-elected Secretary.

As delegate to the conference of State Boards of Health, held in Washington, D. C., May 2d and 4th, Dr. Hamilton gave a short verbal report of the proceedings.

The report of the question proposed by the State Board of Health of Kentucky, "What should State and local Boards of Health teach, and what should they do to prevent consumption?" elicited quite a discussion upon its nature and prevention, which resulted in the adoption of a resolution to issue a circular upon this subject.

It was also voted at this meeting to issue a circular upon "Pure water and how to secure it."

These may be found embodied in this report.

SIXTH MEETING.

A meeting of the State Board of Health was called at the American House, St. Albans, May 22d, 1891. Of the members of the Board only the Secretary was present.

Most of the Health Officers of Franklin county were present, including Drs. W. R. Hutchinson of Enosburgh, R. M. Pelton of Richford, B. W. Davis of Montgomery, E. M. Brown of Sheldon, S. S. Clark of St. Albans, H. R. Wilder of Swanton, G. S. Goodrich of Berkshire, O. G. Stickney of Georgia; also Dr. Dunsmore of St. Albans.

The first business of this meeting was the organization of the Franklin County Sanitary Association. Dr. W. R. Hutchinson was elected President and Dr. H. R. Wilder, Secretary. Meetings of this association will be held every two months.

Dr. Hamilton, as delegate to the conference of State Boards of Health, held in Washington the week previous, made a report of

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the proceedings and gave a review of a paper read at that meeting by Dr. Brice, on the "Contagiousness of Tuberculosis," after which the subject was generally discussed.

Dr. Morin of St. Albans was called upon to discuss the symptoms of tuberculosis in cattle and horses. Dr. Hamilton recommended that the Health Officers of each town look after the general health of the summer visitors this season, with a view to preventing the introduction of any contagious diseases.

SEVENTH MEETING.

Pursuant to the call of the President the Board met at the Brooks House, Brattleboro, June 18, 1891, at 10 A. M. Of the members of the Board only the President and Secretary were present.

Dr. Holton of the village of Brattleboro was present and made a very favorable report of the sanitary condition of the town. He said that since the use of well water for public supply had been abandoned the decrease in prevalence of typhoid fever had been great, there being now only an occasional case, and that imported.

Mr. Hall, Clerk of the Board of Selectmen, and also Clerk of the Village Bailiffs, gave an account of the work being done by the "local Boards of Health" in the matter of general improvement as well as sanitation. He mentioned, especially, the excellent water supply and sewerage system, and he noted, too, the necessary result —the very healthy condition of the town.

Not only did Mr. Hall kindly give the members of the Board an opportunity to visit the principal streets of the village, but they were shown, also, the most unfavorable parts of the town. This inspection tended only to verify the statements of Dr. Holton and Mr. Hall as to the very excellent sanitary condition of their village.

The Selectmen have adopted the Rules and Regulations of the State Board of Health, and have published them entire in their annual Report of the Town. These regulations are given the following preface: "The regulations of the State Board of Health, herewith printed, should be carefully read and complied with willingly. The best results possible would follow, as health is the first requisite for success and happiness."

The Bailiffs, in their report, call attention to the Rules and Regulations of the Board, published by the Selectmen, closing with the remark: "They will be enforced."

A call was made in the afternoon upon Dr. Joseph Draper, Superintendent of the Vermont Asylum for the Insane. Through the

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kindness of Dr. Draper, we were shown the various departments of the institution, and inspected its surroundings, plumbing, heating and ventilation. The arrangement of every part was noteworthy for its good order, cleanliness and adaptability to the convenience and comfort of the inmates.

After this we drove with Dr. Draper to the "summer retreat" of the institution. Here we were shown the home-like cottages which are used exclusively as places of outing for the inmates and not to increase the capacity of the asylum.

EIGHTH MEETING.

At a call of the President, the Board met at the Pavilion Hotel, Montpelier, July 2d, 1891. All the members were present.

Notices had been sent to the Health Officers of the county, requesting them to meet with the State Board. Drs. Camp of Barre, Kemp of Montpelier, Winch of Northfield, Minard of Waterbury and Dr. A. C. Sherman of Windsor county, were present. Mr. Smilie, Chairman of the Board of Trustees, was also at the meeting.

Dr. Kemp reported fifty-four (54) cases of diphtheria in the three months past, with seven (7) deaths, and two cases of typhoid fever. He also reported the plumbing very defective, especially in the older buildings.

Mr. Smilie, for the trustees, guaranteed to spare no pains or expense in prosecuting the work of sanitation.

The Health Officer said that he had found trouble in getting physicians to report. The Board recommended that the law be enforced in a few cases, as a warning to all physicians who were delinquent in this regard.

The Selectmen and Trustees have adopted the Rules and Regulations in full.

NINTH MEETING.

Pursuant to the call of the President, the Board met at the St. Johnsbury House, St. Johnsbury, July 9th, 1891. Dr. Caverly, President of the Board, wired that he could not be present. Dr. Sherwin presided. The following physicians were present: Drs. Newell (Health Officer), Brooks and Calderwood of St. Johnsbury, Dr. Copeland of Lyndon, Dr. Haviland of Danville and Dr. Parker of Peacham. The Selectmen, Daniel Carpenter, Chas. Cobb and O. P. Bennett, were present. Complaint was made of the very unsanitary condition of parts of the village. These nuisances were

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pig pens, stables and water closets, so situated as to be sources of annoyance and danger to the neighborhood. These complaints were verified by the personal inspection of the Board. We inspected one slaughter house, situated within the village limits, that was found to be in a most filthy condition. The local Boards of Health were advised to take very active means in abatement of such nuisances.

Each year improvements and additions are being made to their system of sewerage, but as yet it is very imperfect and incomplete. The water supply for the town is from the river, which is contaminated by sewage, not only from the village of St. Johnsbury but also from the "Centre Village," which is only a few miles distant. It is not uncommon to have typhoid fever in town, and naturally suspicion rests upon the water supply as a cause.

TENTH MEETING.

The State Board of Health met at the Mound House, Castleton, pursuant to the call of the President, July 14th, 1891. This meeting was called in connection with the Rutland County Medical Society. Dr. O. W. Sherwin was not present at this meeting.

A report of the work of the Board was made by the President and Secretary.

The relation of physicians of the State to the State Board of Health was discussed and a hearty co-operation urged, which was seconded by all physicians present.

The nature, cause and prevention of diphtheria was considered at some length, and, while there was some difference of opinion in regard to the nature and cause, all agreed that it *could* and *should* be prevented.

An inspection was made of the State Normal School building, which is located in Castleton Village. It is many years since it was built, and so it is ancient both in point of architecture and methods of heating and ventilation. While its arrangements for healthfulness are as good as the great majority of school buildings in the State, it is far from what a State should furnish for those who are preparing themselves to instruct the rising generation in the laws of health, as being of the greatest importance.

ELEVENTH MEETING.

Members of the State Board of Health met with the Franklin County Sanitary Association, at the American House, St. Albans, July 22d, 1891. Members of the Association present:—Drs. Clark, Dunsmore, Bates, Cross and Giddings.

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The Secretary of the Board read a paper entitled "Dangers of Drinking-Water."

Dr. Wilder read a paper; subject: "Perils of the School Room."

Dr Caverly spoke of the work of the State Board of Health and also discussed at some length the nature and prevention of consumption and the necessity of earnest, persistent work in its prevention.

After the adjournment of the meeting the attention of the Board was called to a bad system of sewerage in the village. A portion of the town sewers empty into what is called Stevens brook, which, at this time, was in a very filthy condition. In a dry season of the year the filth remains in the bed of the brook, ferments and sends forth its sickening, deadening odors. This should be remedied at once.

TWELFTH MEETING.

Pursuant to the President's call, the Board met at Hyde Park, July 31, 1891.

Dr. Caverly, President of the Board, was not able to be present. The physicians present were Drs. Beacon of Eden, Burnett and Church of Stowe, Randall of Hyde Park, Morgan of Cambridge, Allen of Johnson, Holbrook and Rublee of Morrisville.

A sanitary association was formed, of which Dr. Morgan was elected President and Dr. Rublee, Secretary. After this followed a discussion of sanitary work in general.

THIRTEENTH MEETING.

A meeting was held at Rutland, August 20th. The principal work was the inspection of the school buildings, which were found to be in a most excellent condition. Their system of heating and ventilation (Smead's) the Board would recommend as one of the best known.

This was the last meeting held during the year ending August 31st, 1891.

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CORRESPONDENCE.

—:o:—

WINDSOR, VT., Sept. 15, 1890.

Dr. A. H. Chesmore:

Will you please inform me who should be to the expense of cleansing a house, putting on new paper, etc., after a case of diphtheria. Very truly,

J. D. BREWSTER, M. D.,

Health Officer, Windsor, Vt.

HUNTINGTON, Sept. 24, 1890.

J. D. Brewster, M. D., Windsor, Vt.:

DEAR DOCTOR—Yours of Sept. 15 received, and in reply to your interrogatory will say that I do not know of any law bearing upon that question. My opinion is that when the person or family afflicted is poor and unable to bear the loss or expense of the repair, the town should foot the bill, for, in the disinfection of the house, you are protecting the rest of the community from the further spread of the disease, and, besides, it would seem to be an act of justice to the afflicted family. In case the family is in good circumstances financially, I should hardly think they would ask it.

Yours very truly,

A. H. CHESMORE.

The following letter, showing the valuable opinion of the very efficient, able and observing Secretary of the Michigan State Board of Health, was received too late for publication in the Report for 1890:

SULPHUROUS DISINFECTION.

MICHIGAN STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY,
LANSING, MICH, August 23, 1890.

E B. Frazer, M. D, Sec'y of the State Board of Health, Wilmington, Del.:

DEAR DOCTOR—Your letter of August 18, acknowledging the receipt of a copy of my letter to Dr. Duffield (giving results of experience of Health Officers in Michigan, and an account of the experiments by Pasteur, Roux, Dujardin-Beaumetz and others, rela-

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tive to sulphurous disinfection), is before me. You ask me for further opinion, and refer to the Report of the Maine State Board of Health for 1889, page 251, and Dr. T. Mitchell Prudden's estimate of the want of value of sulphurous disinfection.*

There are at least two valid objections to the acceptance of Dr. Prudden's conclusions, to which you refer:—(1) His experiments dealt with a micro-organism, which seems to be different from the one most generally accepted as the probable cause of diphtheria. Therefore he may or may not have been dealing with a micro-organism causing diptheria. (2) The quantity of sulphur burned, the strength of the sulphurous acid fumes which he employed *is not stated.* It having been proved by actual experience with disease and by other laboratory experimenters (Pasteur, Roux, Dujardin-Beaumetz, Vallin, Legouest, Polli, Pettenkofer, Dougall, Fatio, Pietra Santa), that sulphurous acid gas is *not always* a disinfectant when employed in small proportions, and that it *is* a disinfectant when employed in large proportions, such as result from the burning of three pounds of sulphur to each thousand cubic feet of air space, no different conclusion should be reached from Dr. Prudden's experiments, as published.*

You mention that Dr. W. H. Welch of Baltimore "enters his protest" against disinfection by sulphurous acid gas. I respectfully submit that entering a protest should count for very little in science as against results of actual, practical experience in the restriction of diphtheria; it should not even take rank with definite statements of results of laboratory experiments.

Laboratory experiments are very valuable, but they need to be repeated, by the same observer and by other observers, in order to eliminate errors due to accidental and incidental conditions.

It is not easy to make laboratory experiments which shall conform to or correctly represent average conditions in actual outbreaks of disease. That is probably one reason for the discrepancies in laboratory experiments and for the disagreement of some laboratory experiments with practical experience with disease. One reason for this last disagreement may be that micro-organisms which, after subjection to a disinfectant, may ye have sufficient vitality to reproduce in a laboratory where *the most favorable conditions are supplied,* could not possibly do so in the human throat or elsewhere in the human body, because of the well-known power of the fluids of the body to destroy micro-organisms, as proved by Dr. Prudden's and other laboratory experiments, following but not confirming Metschnikoff's doctrine of the phagocytes.

Progress would be easier, more rapid, and the backward and forward movements less frequent if the experimenters in laboratories would be more careful in stating the details of their work.

The interpretation of the results of laboratory experiments and the determination of the bearing which they should have upon practical affairs is an extremely difficult work, and one in which there is very great liability to error.

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*American Journal of the Medical Sciences, May, 1889, p. 470.

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Practical Health Officers need to employ a *gaseous* disinfectant that shall at once reach all surfaces, ledges, cracks, drawers and receptacles of dust wherever it may be in a room, that shall permeate all articles sufficiently permeable to admit disease-causing micro-organisms, that will not necessitate too much labor in the removal of furniture or other articles, and that shall have power to destroy or sufficiently weaken the vitality of the "germs" of such diseases as diphtheria and scarlet fever, and occasionally small-pox, as they are usually distributed in the sick room, and that shall not destroy family portraits and similar articles. Only two such disinfectants are prominently before us for choice—chlorine and sulphurous acid gas. Of these two, sulphurous acid gas is made in proper quantity with more certainty and less trouble than is chlorine gas; and at present I regard the weight of evidence in its favor as equal to that relative to chlorine gas, concerning which not so much evidence has been published. Practical experience in Michigan proves that by isolation of first cases of diphtheria and disinfection of premises after death or recovery therefrom, by fumes of burning sulphur, etc., four-fifths of the cases and deaths which would otherwise occur from that disease are prevented. If there is any other method of disinfection or any other procedure that can be shown to reduce the cases and deaths more than the four-fifths and down to less than an average of two and one-third cases, and six-tenths of one death to each outbreak, I am exceedingly desirous of knowing what it is. But inasmuch as that is the recent experience in Michigan (outside of the great cities), it does not seem best to give up the methods employed until evidence of a better method is produced.

Meantime I would advise a continuance of sulphurous disinfection, for the purposes for which it is applicable and for which it is greatly needed, as stated above, *not* including the disinfection of excretions from the patient, for which chlorinated lime or liquid is applicable, nor of bits of diphtheritic membrane, which should be destroyed by fire as should also all rags and everything else not too valuable, used about a patient; and all clothing, bed-clothes, etc., that can profitably be boiled should be so treated.

Very respectfully,

HENRY B. BAKER.

PROCTOR, VT., Sept. 3, 1890.

Dr. C. S. Caverly, Sec'y State Board of Health:

DEAR DOCTOR—Am in receipt of your communication and circulars, for which receive my thanks.

I have to report to you one case of typhoid fever, in the house occupied by John Cooney, on Terrace Hill, this village, John McNamara by name, 23 years old, Dr. J. D. Hanrahan in attendance.

Fraternally yours,

H. L. NEWELL,

Health Officer.

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RICHFORD, Oct. 3, 1890.

H. L. Newell, M. D., Health Officer:

DEAR DOCTOR—Dr. Caverly forwarded your letter to me reporting a case of "typhoid fever." I am pleased to get these reports, as it shows an interest in sanitary matters. Will you kindly be on the lookout for everything which is of interest to this work of sanitation, and report as often as convenient? It will assist in making up the report for next year.

Very respectfully,

J. H. HAMILTON,

Secretary.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, Oct. 7, 1890.

E. P. Stevens, Esq., Selectman:

MY DEAR SIR—I have the pleasure of acknowledging the receipt of your valuable letter. We intend to ask for special legislation at this session, and your letter will be of service before the committee.

I am going to Montpelier tomorrow evening, and will be at the Welden during the evening and would like to see you if convenient.

Very truly yours,

J. H. HAMILTON, Secretary.

JOHNSON, VT., Oct. 14, 1890.

Dr. Allen:

DEAR SIR—Vol. 1, No. 6, of "The Sanitary Visitor" is before me. I would like all the numbers and samples of other health pamphlets which you distribute. Dysentery seems to be endemic here just now. Have you preventive measures or suggestions as to diet in your printed matter? If charges are made, please indicate.

H. E. HOWARD,

Pastor M. E. Church.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE.
RICHFORD, VT., Oct. 21, 1890.

Rev. H. E. Howard, Johnson:

DEAR SIR—I have received your letter addressed to Dr. Allen, asking for Sanitary Visitors. I will send them. We have no printed matter which would assist you in treatment. I visited Johnson on Friday last and made an inspection of the school building. I sug-

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gested to the Principal and Health Officer some changes by way of improvement; but one very serious defect—the location of the building—is not easily remedied. It is located near that marshy ground—not only near but upon it—so the pupils are subjected constantly to malarial influences. I have no doubt the dysentery, which is endemic, is from malarial causes. The pupils not only suffer, but the citizens also. I hope to hear that something has been done.

Very respectfully,

J. H. HAMILTON, Secretary.

SHELBURNE, VT., Oct. 24, 1890.

Dr. J. H. Hamilton, Sec. State Board of Health:

DEAR SIR—I have been appointed Health Officer by the Selectmen. We have three cases of diphtheria in town now; one death this week. Please send me one hundred copies of circulars Nos. 4 and 5 and any other printed matter you have that will be of any help to us. Yours truly,

F. R. STODDARD.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Nov. 2, 1890.

F. R. Stoddard, M. D., Health Officer:

MY DEAR SIR—I forward you to-day, by mail, circulars Nos. 4 and 5, as you request. I was not at home when your letter came, thus the delay.

Very truly yours,

J. H. HAMILTON, Secretary.

TRANSPORTATION OF CORPSES.

GRAND TRUNK RAILWAY CO. OF CANADA,
OFFICE GEN. PASSENGER AGENT,
MONTREAL, Nov. 20, 1890.

Dr. J. H. Hamilton, Sec. State Board of Health, Richford, Vt.:

DEAR SIR—I send you herewith draft of rules which this company proposes to adopt for the transportation of corpses over its lines. The rules are practically the same as those which have been adopted very generally by railway companies in the United States, and which have received the approval of a number of the State Boards of Health. Will you please examine the rules carefully and advise me at your earliest convenience whether they are satisfactory to your Board. Yours truly,

WM. EDGAR, G. P. A.

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RULES FOR THE TRANSPORTATION OF CORPSES.

A. The transportation of bodies of persons who have died of small-pox, Asiatic cholera, leprosy, typhus fever or yellow fever is absolutely forbidden.

B. The bodies of those who have died of diphtheria, anthrax, scarlet fever, puerperal fever, typhoid fever, erysipelas, measles and other contagious, infectious or communicable diseases, must be wrapped in a sheet thoroughly saturated with a strong solution of bichloride of mercury, in the proportion of one ounce of bichloride of mercury to a gallon of water, and encased in an air-tight zinc, tin, copper or lead-lined coffin or in an air-tight iron casket, hermetically sealed, and all enclosed in a strong, tight wooden box; or the body must be prepared for shipment by being wrapped in a sheet and disinfected by solution of bichloride of mercury, as above, and placed in a strong coffin or casket, and said coffin or casket encased in a hermetically sealed (soldered) zinc, copper or tin case, and all enclosed in a strong outside wooden box of material not less than one inch and a half thick.

C. In cases of contagious, infectious or communicable diseases, the body must not be accompanied by articles which have been exposed to the infection of the disease. And in addition to a permit from the Board of Health or proper health authority, agents will require an affidavit from the shipping undertaker, stating how the body has been prepared and kind of coffin or casket used, which must be in conformity with rule B.

D. The bodies of persons who have died of diseases that are not contagious, infectious or communicable, may be received for transportation to local points in same Province or State, when encased in a sound coffin or metalic case and enclosed in a strong wooden box, securely fastened, so it may be safely handled. But when it is proposed to transport them out of the Province or State to an inter-provincial or inter-state point (unless the time required for transportation from the initial point to destination does not exceed 18 hours) they must be encased in an air-tight zinc, tin, copper or lead-lined coffin, or an air-tight iron casket, or a strong coffin or casket encased in a hermetically sealed (soldered) zinc, copper or tin case, and all enclosed in a strong outside wooden box, of material not less than one inch thick. In all cases the outside box must be provided with four iron chest handles.

E. Every dead body must be accompanied by a person in charge, who must be provided with a ticket for his own transportation and also present a full first-class limited or unlimited ticket, which must have the word "corpse" written across the face of each coupon and contract, and a transit permit from the Board of Health or proper health authority giving permission for the removal, and showing name of deceased, age, place of death, cause of death and (if of a contagious or infectious nature), the point to which it is to be shipped, medical attendant and name of undertaker.

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F. The transit permits have a stub, to be retained by the person issuing it, and two coupons. The transit permit must accompany the body to destination; the first coupon to be detached by agent at shipping point and sent to the general baggage agent, and the second coupon to be detached by the last train baggageman of terminal line and sent to his general baggage agent. The stub, permit and coupons bear the same number. On back of permit there is a space for the undertaker's affidavit, which must be used in cases of contagious or infectious diseases as required by rules B and C.

G. The box containing corpse must be labelled with paster, showing name of deceased, place of death, cause of death, the point to which it is to be shipped, number of transit permit issued in connection, and name of person in charge of remains. There are blank spaces at bottom of paster for station agent at shipping point to fill in the form and number of passage ticket, where from, where to and full route to destination of such ticket.

H. It is intended that no dead body shall be moved which may be the means of spreading disease, therefore all disinterred bodies will be considered as infectious and dangerous to the public health, and will not be accepted for transportation, unless authority for said removal is presented from the Provincial or State Board of Health; also the written consent of the health authority of the locality to which the corpse is consigned. The disinterred remains must be enclosed in a hermetically sealed (soldered) zinc, tin or copper-lined coffin or box or a box encased in a hermetically sealed (soldered) zinc, tin or copper case.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Nov. 22, 1890.

General Passenger Agent Grand Trunk Railway:

DEAR SIR—I have the honor to acknowledge the receipt of yours of the 20th inst. with enclosed rules adopted by the company for transportation of corpses, etc., etc. In reply will forward you by mail a copy of our Third Annual Report, in which please examine pages 26 to 33, inclusive, for desired information.

Very respectfully,

J. H. HAMILTON, Secretary.

GRAND TRUNK RAILWAY CO. OF CANADA,
OFFICE GEN. PASSENGER AGENT,
MONTREAL, Nov. 26, 1890.

J. H. Hamilton, Esq., M. D., Sec'y State Board of Health, Richford, Vt.:

DEAR SIR—I am duly in receipt of your favor of the 22d inst., and also of the Annual Report referred to therein. Please accept my thanks for the same. Yours truly,

WM. EDGAR, G. P. A.

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CANADIAN PACIFIC RAILWAY CO.,
OFFICE GEN. PASSENGER AGENT,
MONTREAL, 29th Dec., 1890.

Dr. J. H. Hamilton, Richford, Vt.:

DEAR SIR—I enclose proof showing proposed rules in connection with transportation of corpses which this company will adopt, provided the consent of the various Boards of Health is given thereto. I also enclose sample of the transit permit mentioned in the rules.

I shall be glad to know if the enclosed meets with your approval. If it does not, will you kindly point out in what particular it does not? Yours truly,

D. McNICOLL,

Per USSHER.

RULES FOR TRANSPORTATION OF CORPSES.

1. The transportation of bodies of persons who have died of small-pox, Asiatic cholera, leprosy, typhus fever or yellow fever, is absolutely forbidden.

2. The bodies of those who have died of diphtheria, anthrax, scarlet fever, puerperal fever, typhoid fever, erysipelas, measles and other contagious, infectious or communicable diseases, must be wrapped in a sheet thoroughly saturated with a strong solution of bichloride of mercury, in the proportion of one ounce of bichloride of mercury to a gallon of water, and encased in an air-tight zinc, tin, copper or lead-lined coffin, or in an air-tight iron casket, hermetically sealed, and all enclosed in a strong, tight wooden box; or the body must be prepared for shipment by being wrapped in a sheet and disinfected by solution of bichloride of mercury, as above, and placed in a strong coffin or casket, and said coffin or casket encased in a hermetically sealed (soldered), zinc, copper or tin case, and all enclosed in a strong outside wooden box of material not less than one inch and a half thick.

3. In cases of contagious, infectious or communicable diseases, the body must not be accompanied by articles which have been exposed to the infection of the disease. And in addition to permit from Board of Health or proper health authority, agents will require an affidavit from the shipping undertaker, stating how the body has been prepared and kind of coffin or casket used, which must be in conformity with rule 2.

4. The bodies of persons who have died of diseases that are not contagious, infectious or communicable, may be received for transportation to local points in same Province or State, when encased in a sound coffin or metalic case and enclosed in a strong wooden box, securely fastened so it may be safely handled. But when it is proposed to transport them out of the Province or State to an interprovincial or inter-state point (unless the time required for trans

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portation from the initial point to destination does not exceed 18 hours) they must be encased in an air-tight zinc, tin, copper or lead-lined coffin or an air-tight iron casket or a strong coffin or casket encased in a hermetically sealed (soldered) zinc, copper or tin case, and all enclosed in a strong outside wooden box of material of not less than one inch thick. In all cases the outside box must be provided with four iron chest handles.

5. Every dead body must be accompanied by a person in charge, who must be provided with a ticket for his own transportation, and a full first-class, limited or unlimited, ticket, which must have the word "corpse" written across face of each portion, and a transit permit from Board of Health or proper health authority, giving permission for the removal, and showing name of deceased, age, place of death, cause of death and (if of a contagious or infectious nature), the point to which it is to be shipped, medical attendant and name of undertaker.

6. The transit permits have a stub (to be retained by the person issuing it) and two coupons. The transit permit must accompany the body to destination, the first coupon to be detached by agent at shipping point and sent to the general baggage agent, and the second coupon to be detached by the last train baggageman of terminal line and sent to his general baggage agent. The stub, permit and coupons bear the same number. On the back of permit there is a space for undertaker's affidavit, which must be used in cases of contagious or infectious diseases as required by rules 2 and 3.

7. The box containing corpse must be labelled with paster, showing name of deceased, place of death, cause of death, the point to which it is to be shipped, number of transit permit issued in connection, and name of person in charge of the remains. There are blank spaces at bottom of paster for station agent at shipping point, who will fill in the form and number of passage ticket, where from, where to, and full route to destination of such ticket.

8. It is intended that no dead body shall be moved which may be the means of spreading disease, therefore *all* disinterred bodies will be considered infectious and dangerous to the public health, and will not be accepted for transportation unless authority for said removal is presented from the Provincial or State Board of Health, and the written consent of the health authority of the locality to which the corpse is consigned is exhibited also. The disinterred remains must be enclosed in a hermetically sealed (soldered) zinc, tin or copper-lined coffin or box, or a box encased in a hermetically sealed (soldered) zinc, tin or copper case.

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FRONT.

No.

TRANSIT

Stub to be retained by person issuing Permit.

TRANSIT PERMIT.

1. *Issued to*.....
2. *Name of Deceased*.....
(If a minor, give parents' names.)
3. *Interment at*.....
4. *Date of Death*.... *Age*....
5. *Place of Death*.....
6. *Cause of Death*.....
7. *Certified by*.....

.....*M. D.*

This Permit must, in all cases, accompany the body to its destination.

No. PERMIT FOR TRANSIT.

Via Canadian Pacific Railway.

In the town of..... .. *County of*.....

.....189..

Permission is hereby given to remove the remains of.....

aged ..... *who died at*.....

(City, or Township and County.)

on the.....*day of*.....189.., *the cause of death being*.....

.....*which is a* .....*disease, and a*

Transit Permit being asked for burial at.....

in the Province or State of.....

Name of Undertaker :

.....

Name of Medical Attendant :

.....

Signed by.....

.....

(Official Title.)

.....

(P. O. Address.)

COUPON No. TWO TO TRANSIT PERMIT No.

.....*who died at*.....

This Coupon will be detached by Train Baggageman of terminal line and sent to General Baggage Agent. (See back.)

COUPON No. ONE TO TRANSIT PERMIT No.

.....*who died at*.....

This Coupon will be detached by Agent or Station Baggageman at initial point and sent to General Baggage Agent. (See back.)

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BACK.

Province or State of..... *Date* 189

I Hereby Certify That the body of.....*named in this transit permit has been prepared by me for transportation by being*.....

.....

.....

Signed.....

Undertaker.

Province or State of.....
County of.....
} *On this*.....*day of*.....*A. D.* 189

before me, a.....(*Notary Public, Justice of the Peace*), *in and for the County and Province or State aforesaid, personally appeared*..... *to me known, and made oath and says that all of the statements contained in the foregoing are true.*

Sworn to and subscribed before me this.....*day of*.....*A. D.* 189

[SEAL.]

.....

.....

Undertaker's Affidavit—Infectious or Contagious Disease.

SECOND COUPON } *Taken at*..... *By*.....

FIRST COUPON } *Taken at*..... *By*.....

(3)

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Jan. 1, 1891.

D. McNicoll, General Passenger Agent:

DEAR SIR—I have the honor to acknowledge the receipt of yours of Dec. 29, enclosing proof of proposed rules regulating "transportation of corpses," etc. In reply, I send you by this mail a copy of Third Annual Report, showing the action of our Board upon this question (see pp. 26 to 33). These blank forms have been distributed to the several towns in the State, so that they are now prepared to comply with those rules. Baggage agents should receive the instructions so that they will understand their duties in the matter.

Please acknowledge receipt of Report, etc.

Very respectfully,

J. H. HAMILTON, Secretary.

CANADIAN PACIFIC RAILWAY CO.,
OFFICE GEN. PASSENGER AGENT,
MONTREAL, 6th Jan., 1891.

J. H. Hamilton, Esq., M. D., Richford, Vt.:

DEAR SIR—I am very much obliged for your favor of the 1st inst., and copy of the Third Annual Report of the State Board of Health of Vermont. I am pleased to know that the State of Vermont anticipated my request. Yours truly,

D. McNICOLL,

Per USSHER.

HINESBURGH, VT., Dec. 31, 1890.

Dr. Allen:

DEAR SIR—We have a case of typhoid fever, Mr. Harris' boy; also a case of diphtheria, a little girl by the name of Alger, from Shelburne. May I ask who is to put notices on the house where contagious diseases are, and who is to disinfect the house, and if any one refuses to obey the regulations, what am I to do? There seems to be, in the minds of some, a doubt as to whether I have any authority to enforce the regulations contained in circular No. 5, so I want to know what I can do and what I cannot do.

Please send me a few circulars No. 5.

Yours fraternally,

H. E. HUNT, M. D.,

Health Officer.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Jan., 1891.

H. E. Hunt, M. D., Health Officer:

DEAR SIR—Yours, addressed to Dr. Allen, just received. I would say in reply, it is the duty of the Health Officer to look after quarantine work and superintend the work of disinfection. If a person neglects or refuses to comply, after having been duly notified (see sec. 6, Act creating Board), etc., and chap. 173, R. L. In case the local Board does not act, the Health Officer should report to the Secretary of the State Board, whose duty it is to bring action against offending parties. Respectfully,

J. H. HAMILTON, Secretary.

STRAFFORD, VT., Dec. 22, 1890.

Dr. J. H. Hamilton, Sec. State Board of Health:

DEAR SIR—In the town of Vershire, a few miles from here, there have been two deaths from malignant diphtheria in the last week, and the remains were brought to this town for burial. There are several more cases in the same family, and it is now confined to that house. The first one that died was taken sick, near here, at an evening party, several school children being present; but she was able to ride home and died in about three days. Now, we want to do all we can to stay it, and respectfully ask you to advise us in the matter. Is it best to close the school where the exposed children attend or quarantine them at home, or isn't it necessary to do either? We have no Health Officer. Sincerely hope the disease will not become epidemic. Respectfully yours,

E. P. HYDE, Selectman.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Dec. 23, 1890.

E. P. Hyde, Esq., Selectman:

DEAR SIR—Yours received this evening asking instructions regarding care of cases of diphtheria. I mail to your address the Regulations of the State Board of Health, including notices to physicians, and also blanks for the appointment of Health Officer, to be signed by selectmen. Please notify me when the appointment of Health Officer is made and his address; also if I can be of more service by visiting the infected town. I will do so if you request it. Very respectfully,

J. H. HAMILTON, Secretary.

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All burials should take place in the night time and no body carried from one town to another without the permission of the selectmen of the town where the interment is to be made.

C. E. Parris, Selectman, Vershire :

DEAR SIR—I have received notice that diphtheria is prevailing in Vershire. Complaint is also made that those who have died of this disease have been carried to another town for burial. The selectmen of Vershire should look after and do what they can to prevent the spread of this disease. I send you to-day Instructions, Regulations of the State Board of Health, blank for appointment of Health Officer (the latter to be signed by selectmen), and notices to physicians.

Could I be of service by visiting your town? I will do so if requested. Very respectfully,

J. H. HAMILTON, Secretary.

WATERBURY, VT., Jan. 13, 1891.

J. H. Hamilton, M. D.:

DEAR DOCTOR—"Gastro-enteric" trouble is not prevalent nor has it been epidemic in this locality. We *are* having a severe epidemic of measles. Yours kindly,

W. F. MINARD.

ST. JOHNSBURY, VT., Jan. 5, 1891.

Dr. J. H. Hamilton :

DEAR SIR—Some of the people in the village of St. Johnsbury are in a quandary how to get rid of some of the nuisances with which they are troubled, with as little fuss as possible, and still make a clean sweep when we get at it. First of all, hogs. In the summer there are several places where it is almost impossible to live on account of the stench from their neighbors' hogs. Also several water closets, in close proximity to neighbors' yards, yield anything but sweet perfumes. Also livery stables, situated close to dwelling houses, and the manure cleaned out spring and fall, does not enhance the price of real estate nor the comfort and health of the inhabitants. The trustees have often been asked to abate those nuisances, but their reply has always been, "Let it alone if you can possibly put up with it, for it will make somebody mad, and then there would be such a hang on to it, and perhaps a lawsuit," and so we have been put off. Now what are the laws that the Board of Health have to back them in such cases, and how shall we go to work in the matter to have no failure at our backs, for we do not want to put our hands to the plow and be obliged to look back. I saw Dr. Rutherford and he said there was law enough; also that the law was right to the point. He told me to write you and that you would send blanks and instructions how to proceed. The vil-

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lage is well sewered and watered, and we have had no epidemic for several years. When we look at Montpelier and St. Albans we tremble with fear for the health of our people, and if there is any way to avoid it, we want to know how, and commence early. Please write and let me know how, when and where to proceed.

Very respectfully,

H. S. CALDERWOOD.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Jan. 7, 1891.

H. S. Calderwood, M. D.:

DEAR DOCTOR—I have the honor to acknowledge the receipt of yours of the 5th inst. The manuscript for documents, etc., is now in the hands of the printer, and I hope to get them to-morrow. As soon as I do I will send them to you. Perhaps the Board will have a meeting in St. Johnsbury in a few weeks. I shall see the other members to-morrow and will suggest it.

Very respectfully,

J. H. HAMILTON, Secretary.

BURLINGTON, VT., Jan. 1, 1891.

Dr. C. S. Caverly:

DEAR DOCTOR—We are having, in Burlington, an epidemic of some kind of bowel trouble. There are probably now and have been, during the last two weeks, over two hundred cases within the city limits. Most of the cases have gastro-intestinal irritation, chills, vomiting, diarrhœa, pain, high fever, 102° to 103°, terminating in small, slimy stools containing blood. Many of the cases are well-marked dysentery from the start—chills, fever, etc., etc.

I am anxious, for one, to know if this is purely a local affair or more or less general. I am always suspicious of our water supply, and feel anxious about it. Will the State Board of Health give us some assistance in the matter?

Very truly yours,

L. M. BINGHAM, M. D.

P. S.—Nothing disastrous has resulted in the course of the epidemic as yet, but many are very sick and confined to bed for one or two weeks.

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RUTLAND, VT., Jan. 2, 1891.

Dr. A. H. Chesmore, President, etc.:

DEAR DOCTOR—I enclose letter just received from Dr. Bingham. I should suggest that we meet in Burlington at an early date and notify the local physicians and others interested. You can use your judgment about calling a meeting there, but it strikes me we should heed such calls as this promptly. Sincerely yours,

C. S. CAVERLY.

HUNTINGTON, VT., Jan. 5, 1891.

J. H. Hamilton, M. D., Secretary:

DEAR DOCTOR—I received the accompanying letters Saturday. I think we should respond to an invitation from Dr. Bingham, and the sooner the better. I will, therefore, call a meeting of the Board at the Van Ness House, Burlington, Thursday, the 8th of January, 1891, at 1 o'clock P. M., and will also insert a notice in the Burlington Free Press inviting all physicians of the city to attend. Yours very truly,

A. H. CHESMORE, President.

BRATTLEBORO, VT., Jan. 24, 1891.

J. H. Hamilton, M. D.:

DEAR DOCTOR—I have waited thus long since the receipt of your communication that I might confer with other physicians in regard to the subject of *gastro-enteric* disease in this locality. No epidemic of this trouble has visited us during the past year.

Sincerely yours,

GEO. F. GALE.

NORTH TROY, VT., Jan. 13, 1891.

J. H. Hamilton, M. D., Richford, Vt.:

DEAR DR.—S. P. Hunt, first selectman of this town, requests me to write you relative to the appointment of a Health Officer for this town. By whom is the appointment made? I asked for the appointment, but Mr. H. says he can't learn that the selectmen have power to appoint. Please enlighten us.

Truly yours,

F. W. C.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Jan. 14, 1891.

F. W. Comings, M. D.:

DEAR DOCTOR—I send you by this mail instructions to selectmen and blanks for appointment of Health Officer. I will send other papers and circulars as soon as I get them from the printer.

Very truly,

J. H. HAMILTON, Secy.

AMERICAN PUBLIC HEALTH ASSOCIATION,
SECRETARY'S OFFICE,
CONCORD, N. H., Jan. 12, 1891.

Dr. J. H. Hamilton, M. D., Secretary State Board of Health, Richford, Vt.:

DEAR SIR—At the eighteenth annual meeting of the American Public Health Association, held at Charleston, S. C., Dec. 16–19, 1890, the following vote was passed:

Voted, To instruct the secretary to advise each State Board of Health, which has not already done so, to issue directions to all local Boards of Health and Health Officers, in reference to the preparation and proper use of disinfectants, basing such directions upon the reports of the Committee on Disinfectants.

Respectfully submitted,

IRVING A. WATSON,

Secretary.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Jan. 14, 1891.

I. A. Watson, M. D., Sec. A. P. H. Ass'n:

DEAR DR.—Your letter of advice to State Board of Health, as per order of A. P. H. Association, received. I take pleasure in saying that our Board have already performed this work.

Respectfully,

J. H. HAMILTON, Secretary.

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NEWPORT, VT., Jan. 25, 1891.

Dr. J. H. Hamilton, Sec. State Board of Health:

DEAR DOCTOR—Your letter of the 10th inst. came in due time. In compliance with your request, I have made inquiries as to the existence of gastro-enteric troubles in this section. I have been unable to find any cases, endemic or otherwise.

We have no prevailing disease at present in this locality, unless it be an influenza or a second edition of "la grippe.

Doctor, I have seen nothing of those circulars you were going to send me. There is going to be a great need of thorough work here in the spring, and if I am expected to look after it, I want our people to fully understand how much authority a Health Officer has to enforce the sanitary laws of the State.

Sincerely yours,

J. C. RUTHERFORD, M. D.

WOODSTOCK, VT., Jan. 13, 1891.

J. H. Hamilton, M. D.:

DEAR DOCTOR—In answer to yours of the 10th, I would say that we have had considerable in the line of gastro-enteric for the past three weeks. It is sufficiently prevalent to call it epidemic. Most cases have commenced with profuse watery diarrhœa; no fever or but little; not much vomiting until the second day, and many cases no vomiting or nausea; putrid odor to the discharges; discharges excoriating; duration, two or three days; in many cases appetite but little impaired. I have had a notion that it was the influenza or "grip" epidemic, and the stress of the trouble being in the bowels, the system was cleared of it sooner than when in air passages or nervous system. It seems to me that the jaundice epidemics of a few years ago were from the same cause, only the duodenum being more involved, closed the orifice of the ductus com.

We have had no very sick patients with this present epidemic, so far.

Our selectmen have appointed Dr. M. H. Chandler Health Officer for our town, and he will confer with you soon. We are going to try to work a little more with the State Board. I think we would like to have you come here this winter. What can we do to make your visit the most profitable? Will you give a public talk, or how? If you will drop me a line I will make any arrangements.

Very truly,

O. W. SHERWIN.

WINDSOR, VT., Jan. 14, 1891.

Dr. J. H. Hamilton, Sec. State Board of Health, Richford, Vt.:

DEAR DR—There have been no cases here, to my knowledge, for years.

Very truly.

J. D. BREWSTER.

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ALBURGH SPRINGS, VT., Jan. 14, 1891.

Dr. J. H. Hamilton, Secretary State Board of Health:

DEAR SIR—Yours received requesting information relative to "gastro-enteric" diseases in this locality. Stomach and bowel derangements are not prevalent here nor have they been in the past. Occasionally, perhaps once or twice a year, a sporadic case of typhoid will arise, but rarely any contagion follows. The exception to this occurred in my practice, last fall, and I think I reported the cases to you at the time, but did not go into detail. A young man came home from Boston and within a week after arriving was taken ill with fever. This continued three weeks without a bowel symptom of any kind. Pulse never run above 100; fever remittent in type; occasional chill. I diagnosed remittent fever. After nearly recovering, he exercised too soon, ate too much and was taken down again worse than before. Pulse went to 130 and 140; fever remittent, up and down at all hours, but no diarrhœa, tympanites or pain in iliac fossa, no delirium. The only untoward symptom was heart failure (threatened). He made at edious recovery. I did not pronounce this typhoid then, nor did Dr. Clark of St. Albans, who saw him in consultation I said it was malarial with typhoid tendency. At any rate, before he recovered the mother and sister were taken down with typhoid in a very severe form. The sister recovered, the mother died from hemorrhage, although she had no more bowel symptoms than did the boy, and seemed only moderately sick; had very poor nursing. Now, did the young man have typhoid fever from the start or did it develop in his system after his relapse? Probably he had it from the start, but it was impossible to detect it. Remittent fevers abound here. I have a dozen cases of such fevers to one of typhoid. After the mother and sister became ill the house was quarantined and no new cases developed. I ordered a well closed up. This well receives the drainage from the house and is the center depression of a 10-acre field. The house stands upon a rock 10 feet above the well, and slops from the back door flow down to it as fast as water can run down hill. When I examined the well the mud was knee deep around it and the top of the water in the well was only two feet below the surface of the ground. Could you imagine anything worse than this? They have had typhoid and diphtheria in the house before.

These are the only cases in town for two years Dysentery is practically unknown. Acute inflammation of the bowels occurs occasionally. Mortality among babies from bowel trouble is very rare. We have more deaths from lung aud spinal diseases among the children than from other causes. We consider this a healthy town, at least the doctors think so, and lament accordingly. Hoping I have not taxed your patience too much, I remain,

Yours sincerely,

FRED L. LADUE.

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BELLOWS FALLS, VT., Jan. 14, 1891.

J. H. Hamilton, M. D.:

DEAR DOCTOR—Replying to yours of the 10th inst., we have not now, nor have had to any extent, any case of "gastro-enteric" trouble.

Yours truly,

F. WHITMAN.

WEST RANDOLPH, VT., Jan. 15, 1891.

J. H. Hamilton, M. D., Secretary State Board of Health:

DEAR DR.—Yours, requesting report of gastro-enteric troubles, received. For the past six weeks we have had quite a number of cases of said disease. During the last two weeks quite an increase in number, but as yet cannot be called epidemic, although we may get something of one if it don't let up soon. We have had nearly, if not quite, as many cases of the difficulty in adults as in children. The symptoms are pain in stomach and bowels, vomiting and diarrhœa, loss of appetite, and, in some cases, considerable fever, tenderness in the hepatic region, urine high colored and the discharges from the bowels very light colored. These symptoms have lasted from one day to two weeks, ending in recovery. I I hardly know the cause, only there seems to be a cessation of the function of the digestive organs and passive congestion, and, in some cases, active congestion of the liver. The sudden changes of the temperature for the past two weeks, coupled with the exposures, from lack of sufficient clothing upon the warm days, has seemed to overwhelm the nervous system and cause debility, and, in some cases, extreme prostration for a time. We also have one case of measles, reported at the hotel to-day, it being the wife of a commercial drummer, temporarily in the place. It probably will not spread.

Yours truly,

A. C. BAILEY.

RUTLAND, VT., Jan. 15, 1891.

J. H. Hamilton, M. D.:

DEAR DOCTOR—Yours of Jan. 10th received. Would say that there has been quite a little "gastro-enteric" trouble in this vicinity, but at present it seems to be abating. The symptoms are: pain, fever, rapid pulse, vomiting and frequent discharges from the bowels. The trouble is of several days duration.

Yours respectfully,

J. E. THOMPSON, M. D.

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ISLE LA MOTTE, VT., Jan. 19, 1891.

J. H. Hamilton, M. D.:

DEAR DOCTOR—In regard to your inquiry, would say that we have had no "gastro-enteritis" here or any epidemic of any kind for some time. Very truly yours,

M. C. HYDE.

ARLINGTON, VT., Jan. 18, 1891.

J. H. Hamilton:

DEAR DOCTOR—Yours of the 12th received. In reply would say that we have had and are now having more or less gastro-enteric troubles, but I hardly think it has been an epidemic, yet one-half the people here have been more or less affected. Symptoms, chill, headache, pain in stomach, vomiting, diarrhœa, thirst and fever, lasting about a week or ten days. The cause, I have thought, came from surface water running into springs and wells, as these attacks came after a rain or warm spell. Anything further that I can communicate to you will be pleased to do so.

Truly yours,

W. S. PHILLIPS.

JERICHO, VT., Jan. 19, 1891.

J. H. Hamilton, M. D.:

DEAR DOCTOR—I have seen but one or two cases of "gastro-enteric" trouble, nor have I heard of any other cases, but we are having a good many cases of measles in this town and Bolton.

Yours very truly,

F. H. CILLEY.

SEATTLE, WASH., Jan. 14, 1891.

J. H. Hamilton, M. D., Sec'y State Board of Health, Montpelier, Vt.:

DEAR SIR—We have had considerable typhoid fever here, and so I am looking the subject up. Have you any publications bearing on this subject or water and food analyses? If so, I should be pleased to get them. Have you a Food and Dairy Commission? If so, I should be pleased to obtain these reports.

Respectfully,

C. E. BOGARDUS.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE.
RICHFORD, VT., Jan. 30, 1891.

C. E. Bogardus, Esq., Assayer and Chemist:

DEAR SIR—Yours of the 14th inst. received. Our Board has no publications bearing upon the subject of food and water analyses, neither have we a Food and Dairy Commission.

I am sure that water, more than any other, is the medium for the transmission of typhoid fever, either directly or indirectly. I have, in my own experience, seen one instance where by the drinking of impure and contaminated water forty or more cases resulted and six or eight deaths. Respectfully,

J. H. HAMILTON,

Secretary.

MONTPELIER, VT., Jan. 19, 1891.

Dr. Hamilton:

DEAR SIR—Your letter should have been answered before. We have no "gastro-enteric" troubles in this region at present. Not a case of diphtheria in town. Any amount of measles.

Yours respectfully,

D. G. KEMP.

MIDDLEBURY, VT., Jan. 14, 1891.

J. H. Hamilton, M. D., Secretary:

DEAR DOCTOR—In reply to yours of the 10th: During my residence in Middlebury (ten years) "gastro-enteritis" has never been epidemic. However, every autumn we have had quite a number of cases of enteric fever. Not over ten per cent of the cases have been malignant. In most cases the temperature has run under 105; continuation from three to ten weeks (the latter being the exception). We attribute the cause to drinking well water. We have no good system of drainage. We are to put in a system of "water works" in the spring and good drainage will necessarily follow.

We had very little sickness of any kind during 1890, (with the exception of "la grippe,") and I think the reason is, people have largely abandoned drinking well water, substituting cistern water instead. The village people are becoming convinced that my theory is correct: "*Our well water is bad.*"

Kindly yours,

M. D. SMITH,

Health Officer.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, Jan. 19, 1890.

Dr. Morin:

MY DEAR SIR—Will you kindly give me an account of your recent investigation of cattle disease, "post-mortem" appearances, your opinion of the cases and what steps were taken for the prevention of the spread of the disease.

This is a matter of which the State Board of Health should take cognizance. As you can readily see, in many of these diseases it has very materially to do with the public health. The two Boards should coöperate in this work.

Very truly yours,

J. H. HAMILTON, Secretary.

ST. ALBANS, VT., Jan. 25, 1891.

Doctor Hamilton:

DEAR SIR—I have failed to find any contagious disease among cattle yet. The trouble among cattle at Highgate was caused by bad ensilage. Very truly yours,

C. S. MORIN,

State Veterinary Inspector.

FERRISBURGH, VT., Feb. 6, 1891.

Dr. C. S. Caverly, Rutland, Vt.:

DEAR DOCTOR—I received your letter and accompanying circular, and the delay in replying has been owing to the difficulty of getting any accurate information.

The two fatal cases, and, in fact, all of true diphtheria in town, were in the far southeast, near what is called the "kaolin beds."

Yesterday afternoon I met Dr. Willard of Vergennes, and he informed me that he was the attending physician, and that there were no more cases in town.

I think perhaps he will write you, as he, as well as myself, would be obliged for any circulars for distribution and any other information deemed important. Very respectfully yours,

DR. H. F. CRAM.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Feb. 10, 1891.

H. F. Cram, M. D.:

MY DEAR DOCTOR—Your letter to Dr. Caverly has been forwarded to me. I wish to send to the Health Officer at Ferrisburgh (if one has been appointed, and if not, I would like to have the selectmen attend to the matter at once so that I may do so), instructions, documents, etc.

Will you kindly inform me regarding the matter and oblige,

Very respectfully,

J. H. HAMILTON, Secretary.

AURORA, ILL., Feb. 3, 1891.

J. H. Hamilton, M. D., Sec. Vt. State Board of Health:

DEAR SIR—Will you be so kind as to send me your rules and regulations governing the testing and use of illuminating oils; also description of the apparatus employed and method of testing, and oblige. Yours truly,

GEO. H. ELLIS,

Chemist C., B. & Q. R. R.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Feb. 10, 1891.

Geo. H. Ellis, Chemist C., B. & Q R. R.:

DEAR SIR—I have the pleasure of acknowledging the receipt of yours of the 2d inst., and in answer to the same, regarding our rules and regulations for testing and use of illuminating oils, etc., I will refer you to Second Annual Report of the State Board of Health (p. 21), which I forward you by this mail.

Respectfully,

J. H. HAMILTON, Secretary.

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REGULATIONS CONCERNING CATTLE TRANSPORTATION.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
WASHINGTON, D. C., February 5, 1891.

To the Managers and Agents of Railroad and Transportation Companies of the United States, Stockmen and others:

In accordance with Section 7 of the Act of Congress approved May 29, 1884, entitled "An Act for the establishment of a Bureau of Animal Industry, to prevent the exportation of diseased cattle and to provide means for the suppression and extirpation of pleuro-pneumonia and other contagious diseases among domestic animals," and of the Act of Congress approved July 14, 1890, making appropriation for the Department of Agriculture for the fiscal year ending June 30, 1891, you are hereby notified that a contagious and infectious disease known as Splenetic or Southern fever exists among cattle in the following described area of the United States:

All that country lying east and south of a line commencing at the southeast corner of the Territory of New Mexico, thence running northerly along the eastern boundary of New Mexico to the southwestern corner of the county of Cochran, State of Texas, thence easterly along the southern boundaries of the counties of Cochran, Hockley, Lubbock, Crosby, Dickens and King to the one hundredth meridian of longitude; thence northerly along said one hundredth meridian to the southern boundary of the State of Kansas; thence easterly along the southern boundary of the State of Kansas to the northeast corner of the Indian Territory; thence southerly along the eastern boundary of the Indian Territory to the southwestern corner of the State of Missouri; thence easterly along the southern boundaries of the State of Missouri and the State of Kentucky and the State of Virginia to a point where said boundary is intersected by the Blue Ridge Mountains; thence in a northeasterly direction, following said Blue Ridge Mountains to the southwestern corner of the county of Madison, State of Virginia; thence easterly along the southern boundaries of the counties of Madison, Culpeper and Stafford; thence northerly along the eastern boundary of Stafford county to the Potomac River; thence, following the Potomac River, southerly to the Chesapeake Bay; thence easterly along the southern boundary of Maryland to the Atlantic Ocean.

From the fifteenth day of February to the first day of December, 1891, no cattle are to be transported from said area to any portion of the United States north or west of the above described line, except in accordance with the following regulations:

1st. When any cattle in course of transportation from said area are unloaded north or west of this line to be fed or watered, the places where said cattle are to be so fed or watered shall be set apart and no other cattle shall be admitted thereto.

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2d. On unloading said cattle at their points of destination, pens shall be set apart to receive them and no other cattle shall be admitted to said pens; and the regulations relating to the movement of Texas cattle, prescribed by the Cattle Sanitary Officers of the State where unloaded, shall be carefully observed. The cars that have carried said stock shall be cleansed and disinfected before they are again used to transport, store or shelter animals or merchandise.

3d. Whenever any cattle that have come from said area shall be reshipped from any of the points at which they have been unloaded to other points of destination, the car carrying said animals shall bear a placard stating that said car contains southern cattle, and each of the way-bills of said shipment shall have a note upon its face with a similar statement. At whatever point these cattle are unloaded they shall be placed in separate pens, to which no other cattle shall be admitted.

4th. The cars used to transport such animals and the pens in which they are fed and watered, and the pens set apart for their reception at points of destination, shall be disinfected in the following manner:

(*a.*) Remove all litter and manure. This litter and manure may be disinfected by mixing it with lime, diluted sulphuric acid, or, if not disinfected, it may be stored where no cattle can come in contact with it until after December 1st.

(*b.*) Wash the cars and the feeding and watering troughs with water until clean.

(*c.*) Saturate the walls and floors of the cars and the fencing, troughs and shutes of the pens, with a solution made by dissolving four ounces of chloride of lime to each gallon of water. Or disinfect the cars with a jet of steam under a pressure of not less than 50 lbs. to the square inch.

The losses resulting yearly to the owners of susceptible cattle, both in the inter-state and export trade, by the contraction of this disease from exposure in unclean and infected cars and pens, and by means of the manure carried in unclean cars from place to place, and the threatened prohibition of our export trade by foreign governments because of the occurrence of this disease, have become a matter of grave and serious concern to the cattle industry of the United States. It is absolutely essential, therefore, that this cattle industry should be protected as far as possible by separating the dangerous cattle and by the adoption of efficient methods of disinfection.

A rigid compliance with the above regulations will insure comparative safety to northern cattle and render it unnecessary to adopt a more stringent regulation, such as the absolute prohibition of the movement of southern cattle except for slaughter during the time of year that this disease is fatal.

Inspectors will be instructed to see that disinfection is properly done, and it is hoped that transportation companies will promptly put in operation the above methods.

Very respectfully,

J. M. RUSK, Secretary.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., Feb. 14, 1891.

Col. Fletcher D. Proctor:

MY DEAR SIR—At the request of Dr. C. S. Caverly I send you to-day 700 circulars, No. 4, for distribution among your workmen.

Respectfully,

J. D. HAMILTON, Secretary.

PROCTOR, VT., March 3, 1891.

Dr. J. H. Hamilton, Richford, Vt.:

DEAR SIR—The circulars which you sent me have been received and I have had them carefully distributed at our place, and have sent some of them to West and Center Rutland to be distributed there among our men. Shall be very glad at any time to distribute anything which you may send.

Yours truly,

FLETCHER D. PROCTOR.

HARTFORD, VT., Feb. 4, 1891.

C. L. Allen, M. D.:

DEAR DOCTOR—Two more cases of diphtheria in the same house: Mrs. Copeland, aged 45 years; Mrs. Eastman, 21. The boy Porter is dead. Respectfully yours,

J. H. DAY,

Per B.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., March 10th, 1891.

J. A. Day, M. D.:

DEAR SIR—Your letter of Feb. 4th just received reporting cases of diphtheria. I send you by this mail circulars, etc., supposing you are Health Officer. If you are not, will you kindly write me regarding the matter, so that I may act accordingly.

Respectfully,

J. H. HAMILTON, Secretary.

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GREENSBORO, VT., March 13, 1891.

Dr. J. H. Hamilton, Richford, Vt.:

DEAR SIR—Dr. F. C. Kinney was appointed on the Board of Health four or five years ago. Is that appointment good now?

Respectfully yours,

J. B. COOK,

Chairman Selectmen.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., March, 16, 1891.

J. B. Cook, Chairman Selectmen, Greensboro:

DEAR SIR—Yours of the 13th inst. received. Dr. Kinney's appointment as Health Officer is still good if no other has been made since. However I enclose blank for his reappointment; also regulations to be signed by selectmen and recorded in town clerk's office, which will be for the guidance of the local Board.

Respectfully,

J. H. HAMILTON, Secretary.

WAITSFIELD, VT., March 12, 1891.

Dr. J. H. Hamilton, Sec. State Board of Health:

DEAR SIR—Will you please send me circulars or directions, by next mail, which your Board may have for distribution, relating to the control and prevention of contagious diseases, notably, *diphtheria*, which has appeared in our town in a very bad type; also anything relating to the duties and authority of Health Officers.

Respectfully yours,

C. E. JONES,

Selectman.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., March 14, 1891.

C. E. Jones, Esq., Selectman:

DEAR SIR—Yours received. I send by this mail circulars, directions, etc., as requested. Please notify me who you appoint as Health Officer.

Respectfully,

J. H. HAMILTON, Secretary.

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HINESBURGH, VT., March 17, 1891.

Dr. Hamilton :

DEAR SIR—Yours of the 10th at hand. I would say in reply that I did not receive my appointment until the last of October, and did not keep as strict a record as I ought, but will be more careful in the future and make out the quarterly reports and send them in. Do I receive my appointment each year, or do I remain as Health Officer until my successor is appointed ? I shall try to do my duty while I hold the office.

Yours fraternally,

H. E. HUNT.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., March 19, 1891.

H. E. Hunt, M. D., Health Officer :

DEAR SIR—I take pleasure in acknowledging the receipt of yours of 17th inst., also report of contagious diseases for quarter ending Feb. 28th. Your appointment is good until another is made. I think it is better not to change unless for cause, which I am sure is not necessary in your case.

Very sincerely,

J. H. HAMILTON, Secretary,

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF CHEMISTRY,
WASHINGTON, D. C., April 10, 1891.

J. H. Hamilton, M. D., Sec. State Board of Health :

DEAR SIR—Congress having made it the duty of the Department of Agriculture to examine into and report upon the extent and character of the adulteration of food, drugs and liquors, it has been determined to ask information bearing upon the subject from chemists, druggists, manufacturers and dealers in food and drug products, as supplemental to the extended analysis already made by the chemists of the department. Wishing to be thoroughly accurate and absolutely impartial, the fullest information is desired, and anything you can furnish bearing on the subject will be duly appreciated and judiciously used. Enclosed you will find penalty envelope for reply. H. W. WILEY, Chemist.

A. J. WEDDERBURN, Special Agent.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., April 17, 1891.

Hon. Edwin Willits, Asst. Sec. of Agriculture:

DEAR SIR—I have the honor to acknowledge the receipt of yours of the 10th inst. In reply I have to say that the State of Vermont makes no provision for the analysis of food, drugs, etc., and, therefore, only in special cases would the Board of Health be expected to do this work, and no case of the kind has been referred to them. Respectfully,

J. H. HAMILTON, Secretary.

NEWFANE, VT., April 27, 1891.

Dr. C. L. Allen, Sec. State Board of Health, Rutland, Vt.:

MY DEAR SIR—I think our State Board of Health ought to take some action in regard to the removal of a certain slaughter-house, situated upon the land of W. N. Chase and leased by him to Fred and Ezra Pierce. People in this immediate neighborhood did all they could last summer, in a general way, both by talking with Mr. Chase and the occupant, Mr. Bliss, and even offered to put in time and work to help erect a suitable building away from the village, but Mr. Chase told me he shouldn't lease it again to any one; that he could not stand the stench himself, and believing him to be true to his word, we concluded to stand it through the season without trouble, although at times it was almost unendurable. In the hot days of July and August, when it seemed as though we could not live with our houses entirely closed, this terribly filthy, poisonous, sickening smell penetrated every part of our dwellings, until it seemed as though we could not endure it longer. Now, Mr. Allen, in the name of God, justice and right, must we bear this burden another summer? They are doing quite a large business for a country village. It will soon be warm weather, and the yard and house will begin to smell. I say it is impossible for anyone to use these premises for this purpose, in the way they are used, without endangering the health of the community. The blood and offal is thrown into an open yard, exposed to wind, sun and rain, and rooted about from day to day by a lot of swine that seem to think it their duty to keep it above ground as much as possible. There are six families who live nearer this "gut pit" than I, yet last summer some nights we were so sick from this stench we could not eat any supper. This is a peaceable neighborhood. There is not a person in it that wants to make any trouble or have any quarrels. I don't know of any one here but what is friendly to Mr. Chase, but we don't want this house to remain here and be used for the purpose of a slaughter-house any longer, and as good, peaceable, law-abiding citizens, all we ask in this matter is *justice*. This house and yards are only 15 rods from the residence of A. C. Harvey, 20 from that of Mrs. A. B. Chase, 20 from Mrs. H. Mor-

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gan's, 22 from M. R. Pratt's, 20 from S. P. Miller's, 18 from W. N. Chase's, 19 from the highway leading from Newfane to Townshend, 20 rods from the highway leading from Newfane to Wardsboro, and only a few rods further away from the residences of S. B. Higgins, Lucy C. Cushing, N. E. Pratt, F. W. Underwood, Mrs. Sophia Warren and G. W. Parsons. I have been out this evening and measured some of these distances and estimated the others. I don't want you to leave this matter with our selectmen, unless you fully explain to them their duties and the penalties provided if they fail to perform them. People are too lenient about such things where the health of the community is at stake. Very respectfully yours,

J. M. MILLER.

STATE BOARD OF HEALTH,
RUTLAND, May 5, 1891.

J. M. Miller, Newfane, Vt.:

DEAR SIR—Your letter, addressed to Dr. Allen, Secretary State Board of Health (deceased), is placed in my hands. I enclose circular No. 1 of our Board, in which you will find the law quoted, and by it you will see that your board of civil authority have control of slaughter-houses. The selectmen, too, can control the nuisance, if it is as you represent. Please put the circular into the selectmen's hands, and in case they refuse to act communicate with me again. Our Board will send a representative to your town if necessary, and will do anything that it has authority to do, but your own officers can regulate such nuisances legally, and our board can do nothing except advise. Very truly yours,

C. S. CAVERLY,
President State Board of Health.

WEST RUTLAND, VT., April 15, 1891.

J. H. Hamilton, M. D.:

DEAR SIR:—I enclose report for quarter ending February 28. About two weeks ago a case of diphtheria which resulted fatally in three days occurred in this place. It was not reported by the physician in charge, and though rumors came to me, I could learn nothing definite. A second case, under similar circumstances, progressed till yesterday, when I learned of the sickness and on investigation found diphtheria. No thorough means to restrict the disease had been taken—trusting in Providence for a favorable termination probably. This case died to-day.

Two other cases came under my notice this noon, both having been taken sick this morning. They are both quarantined, but I doubt if it can be stamped out here. Exposures must have been taken in the first two cases.

Respectfully,
CARROLL B. ROSS.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, April 16th, 1891.

C. B. Ross, M. D., Health Officer:

DEAR SIR:—Yours enclosing quarterly report received, also a report of the outbreak of diphtheria. I sent you notices to physicians a short time since, like the one enclosed. See to it that each physician in your town has one, which will be the notice required. If they refuse or neglect to comply, give the matter into the hands of the "State's attorney" for prosecution. I have asked Dr. Caverly to assist you.

Respectfully,

J. H. HAMILTON,

Secretary.

SWANTON, VT., Aug. 29th, 1891.

Dr. J. H. Hamilton, Secretary of State Board of Health:

At a meeting of the trustees of the village of Swanton this day we passed a resolution in relation to contagious diseases, a copy of which the clerk will send you, and also ask for some copies of your circulars to be distributed among physicians and others here. We trust the resolution will meet with your approval, as we most cordially and earnestly wish to co-operate with and carry out your instructions to prevent the spread of contagious diseases in this village. Should we ask, will you again visit our village when we can give our entire time to you in this matter. If the resolution does not cover the ground intended, will you kindly say so. We do not find any law whereby the town or village can appoint a Health Officer, only that the selectmen and trustees have all power to carry out any instructions you may give as State Board of Health, among which are posting and quarantining houses, I think. Please remember me kindly to your brother, who was in the same regiment with me during the war.

Truly yours,

C. H. REYNOLDS,

2d Trustee, Village of Swanton.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, Aug. 31, 1891.

C. H. Reynolds, Esq., 2d Trustee:

DEAR SIR:—Yours of the 29th inst. is at hand; resolution not yet received. Am pleased to know that it is the desire of your board to co-operate with the State Board in this important work.

Section 6 of act 93 gives to the State Board authority to promulgate and enforce such regulations, etc., etc.

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Circular No. 1, page 3, requires of selectmen and trustees the appointment of a medical man as Health Officer. Selectmen have authority in villages unless the village charter provides for the health department.

Whenever you wish me to do so, I will visit your village again.

Very truly,

J. H. HAMILTON,

Secretary.

SWANTON, VT., August 29, 1891.

Dr. J. H. Hamilton, Sec. Board of Health, Richford, Vt.:

DEAR SIR—Please send me 100 copies of "Rules and Regulations respecting Infectious and Contagious Diseases," etc. This is at request of our Trustees. At a meeting of the Board of Trustees, held to-day, the following resolution was adopted, viz.:

"*Resolved*, That whenever there shall occur in the village of Swanton a case of scarlet fever, diphtheria, typhoid or typhus fever, small-pox or cholera, the physician in charge shall at once report the same to the Trustees, who shall immediately report the same to the State Board of Health, and shall instruct the physician in charge to see that the rules and regulations of the State Board of Health are in all respects complied with.

(Signed,) E. P. ADAMS, C. H. REYNOLDS, F. SMITH, } Trustees.

Approved August 29th, 1891. E. W. JEWETT, Pres't."

Yours respectfully,

HENRY A. BURT, JR., Clerk.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., August 31, 1891.

H. A. Burt, Jr., Esq., Clerk Board of Trustees:

DEAR SIR—Yours of the 29th inst. received. I have this to say regarding the resolution, that it meets with the hearty approval of the Board. Such hearty coöperation can but result in great good. You will see in circular No. 1, page 3, that one of the rules promulgated by the State Board is that "local Boards of Health"—selectmen—shall or should appoint a medical man as "Health Officer." I send, as per request, 100 copies "Rules and Regulations" No 5. Very respectfully,

J. H. HAMILTON, Secretary.

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STATE OF VERMONT,
EXECUTIVE DEPARTMENT,
HYDE PARK, March 27, 1891.

DEAR DR. HAMILTON—I enclose circular received from Secretary Rusk. Can you put me in possession of the necessary data upon which to predicate an answer? Yours truly,

C. S. PAGE.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
WASHINGTON, D. C., March 19, 1891.

SIR—As it has been made by Congress the duty of this department to make a special investigation on the subject of "Adulteration of Food, Drugs and Liquors," I beg you will furnish me at your earliest convenience any documents you may have bearing upon investigations made by your Department or in your State regarding the adulteration of either food, drugs or liquors. I should be glad to receive any evidence as to the extent to which the adulteration of food, drugs and liquors prevails, whether of products of your own State or of products imported from other States.

It is designed to make the present investigation the basis of a very complete report, and any information or assistance that you can give to the department in carrying out this object will be gratefully received and duly acknowledged.

I have the honor to be, sir,

Yours respectfully,

J. M. RUSK. Secretary.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE.
RICHFORD, VT., March 28, 1891.

His Excellency, C. S. Page, Governor:

DEAR SIR—I have the honor to acknowledge the receipt of yours of the 27th inst., enclosing circular from Secretary Rusk, relating to "Adulteration of Food, Drugs, Liquors," etc. I have to say in reply that no investigations have been made by the State Board of Health, none have been asked and no appropriation has been made by the State for this purpose. The statute prescribes a penalty for such adulteration, but provides no means for inspection. (Chap. 199, R. L.) A bill relating to this matter was killed by the Legislature of 1890.

Respectfully,

J. H. HAMILTON, Secretary.

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BRATTLEBORO, April 23, 1891.

C. S. Caverly, M. D., Secretary of Board of Health:

MY DEAR DOCTOR:—The board of selectmen have not appointed a Health Officer for the reason that they, in harmony of action with the board of bailiffs of the village, have performed the duty of such officer. I have been chairman of each board and your rules and regulations have been, to a great extent, enforced. We published in our town report in full said rules and regulations, saying they would be enforced. I am still chairman of the board of selectmen. Our village meeting is May 5th. I would like two hundred copies of your rules for distribution. The report mailed you this day shows the good work of your board. There is no town in New England where health and sanitary laws are lived up to equal to Brattleboro. I have made the subject a personal matter for three years.

Yours,

GEO. W. HOOKER.

BRATTLEBORO, VT., June 15th, 1891.

MY DEAR DOCTOR:—I am very sorry that I cannot show you the good effects of the enforcement of the regulations of the State Board of Health. We claim to come nearer to cleanliness than any other place in all New England. I am obliged to be in Boston Thursday, 18th inst.; shall not return until the 24th. I shall ask Dr. Holton and others to meet you. Thanking you for good work done, and through you, your associates, I am

Yours,

GEO. W. HOOKER.

DR. C. S. CAVERLY, State Board of Health.

STATE BOARD OF HEALTH,
PRESIDENT'S OFFICE,
RUTLAND, June 12, 1891.

J. H. Hamilton, M. D., Secretary, etc.:

DEAR DOCTOR:—I attended the meeting of the State Board of Health at Middlebury, yesterday. All the members were present except yourself and Dr. Sherwin. Your telegram announcing your inability to be present was read at the meeting as was also a letter from Dr. Sherwin expressing some doubt as to *his* being present. Expressions of regret were numerous. However, it being a hot day, and no one presenting any business of importance, the Board enjoyed the funereal quiet of the Addison House and tried to keep cool.

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The Board saw several Middlebury physicians, and the Health Officer, Dr. Smith, escorted the Board about the village, and called its attention to what he considered the town's most palpable sanitary imperfections.

These consisted of numerous sink and closet drains opening in the open gutter in front of houses, on some of the best streets in the village apparently. The odor from these open drains is perceptible and noticeable to one driving through the streets. Dr. Smith informed the board that the village had no sewers except in two or three localities. One of the latter localities is that of the high school building and college boarding house, where a sewer was constructed at his suggestion.

The town is admirably situated for drainage and there seems to be little excuse for its lack of modern sewerage facilities. It has had no severe visitation of disease and is usually free from diphtheria. If this disease once gains a footing in the town, its poor sewerage may become an important factor in spreading it.

The town has typhoid regularly every year. This is due probably to the practice of using well water; in fact, Dr. Smith informed the board that since many families had been induced to use rain-water collected from the roof for drinking, the number of cases of typhoid had perceptibly diminished.

The village is about to pump water from Otter Creek, taken just above its limits, for drinking purposes.

Dr. Smith is evidently a vigilant and efficient Health Officer, and it was the opinion of the board that he was the right man for the place.

The board adjourned at about 4:30 P. M. to meet in Brattleboro on June 18th, at 10 o'clock A. M., when it was hoped the other members would be present. With kind regards,

I am sincerely yours,

C. S. CAVERLY,

President State Board of Health.

ST. JOHNSBURY, VT., June 2, 1891.

Dr. J. H. Hamilton :

DEAR SIR—We have several nuisances in the village which are detrimental to the health of the citizens. The trustees have been applied to, and claim that they are powerless in the matter. Has the State Board of Health any power to cause such things to be removed? If so, what and how much. Please let me know what can be done and how to do it. I can send you a petition of any size, if you want. Please let me know as soon as convenient all about the matter, for it is coming warm weather, and we must have something done at once if possible.

Very respectfully,

H. S. CALDERWOOD.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., June 4, 1891.

H. S. Calderwood, M. D.:

DEAR SIR—In reply to yours of the 2d inst. I would say that sections 3924 and 3925, chap. 173, R. L., will explain fully the methods to pursue and the remedy to use in the abatement of nuisances. The trustees have no authority unless the village charter provides for a health department and health officer, but the selectmen are the Board of Health.

I send you the documents for the selectmen to sign, which will enable them to work advantageously as a Board of Health.

Respectfully,

J. H. HAMILTON, Secretary.

ST. JOHNSBURY, VT., June 25, 1891.

J. H. Hamilton, M. D., Sec. State Board of Health:

DEAR SIR—Enclosed please find petition from the citizens of St. Johnsbury, asking the Board to visit the town as soon as possible; and I hope that it will be so you can come soon. On the petition you will find the names of Daniel Carpenter, Charles Cobb and O. P. Bennett, who constitute the board of selectmen. Again, E. H. Blossom, W. E. Peck and T. R. Stiles, M. D., three of the five trustees. I could get more names, but think this enough. Please let me know when you are coming so I can have the selectmen ready to attend to business. Very respectfully,

H. S. CALDERWOOD.

We, the undersigned, citizens of the village of St. Johnsbury, feeling that there are several nuisances within the village, which are detrimental to the health of the people living near them as well as the public in general, such nuisances being dry earth closets, hog pens, hen houses, piles of dirt and filth near dwelling houses, etc., etc, would respectfully petition the Honorable Board of Health to visit St. Johnsbury as soon as possible and confer with the selectmen to devise some method for their immediate abatement, before the hot summer weather makes such nuisances dangerous to the health of the people.

H. S. Calderwood, M. D., W. I. Shattuck, E. Shattuck, E. C. Brooks, Geo. W. Barrett, A. Worcester, A. B. Howard, Charles Cobb, H. H. Carr, H. J. Goodrich, R. Balch, H. Randall, Chas. A. Calderwood, Chas. A. Boynton, W. A. Burke, A. C. Harvey, F. E. Spaulding, G. R. Spaulding, I. N. Frost, Edward Johnson, Frank B. Martel, Charles T. Walter, Truman C. Fletcher, E. H. Blossom, H. C. Newell, M. D., Daniel Carpenter, S. H. Spar-

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hawk, M. D., Charles B. Hall, M. D., W. L. Hall, M. D., D. M. Miller, T. R. Stiles, M. D., Wm. Daniels, H. W. Allen, W. E. Peck, M. J. Russell, A. W. Scott, J. O. Goyette, M. D., Arthur F. Stone, O. P. Bennett.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, VT., June 26, 1891.

H. S. Calderwood, M. D.:

DEAR DR—Your letter and petition received. We meet at Montpelier next week and will arrange for meeting at an early date. You will receive notice.

Respectfully,

J. H. HAMILTON, Secretary.

ST. ALBANS, VT., July 18th, 1891.

Dr. J. H. Hamilton:

I write you in regard to the brook running through lower Welden street called "Stevens Brook." If there is anything that will breed typhoid fever and diphtheria, it must be this same brook. It was so bad before the trustees put in the sewer taking in Diamond and South Main streets, that a resident got up a paper asking us all to sign it, opposing their letting it empty into this brook, but it made no difference with their plans. Now it is the most vile, nauseating nuisance you can imagine. I can hardly live with my house open days, and nights dare not have my windows open. Sink drains from Rugg, England, Upper and Lower Welden streets and some of Main street, empty into this brook. It has been carried into the village meetings by good, responsible men, but nothing done about it.

Hearing that the State Board of Health was liable to be here in a few days, I inform you of this terrible nuisance, hoping you will take action about it, and compel them to continue the sewer farther down before we have the fearful scourge of diphtheria again. I am one that should dread it, as my little granddaughter had it last August, and she had always been kept entirely away from all localities where they had it, so that it was a mystery to Dr. Sherwood how she could have it, but the family never doubted that it was the brook.

Yours respectfully,

MRS. L. L. HAWES,

2, Lower Welden Street.

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STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, July 18th, 1891.

Mrs. L. L. Hawes:

DEAR MADAM:—We expect to be in St. Albans July 22d.

Respectfully,

J. H. HAMILTON, Secretary.

SHELDON, July 3, 1891.

C. L. Allen, M. D., Secretary of State Board of Health:

DEAR DOCTOR:—I have to report a case of diphtheria that made its appearance in this town June 29. The patient is a little boy four and one-half years old. The child's father is a well-to-do farmer whose house is situated upon a dry sandy knoll in what would seem a very healthy locality. No direct cause of contagion can be traced. The sanitary condition of the out-buildings, etc., seems to be good. The well is located some fifteen rods from the house, and ten or more from the barn and away from the natural drainage. The only cause to which I can attribute the disease is a bad smelling calf-pen containing six or eight calves, located just across the road from the house. The feeding place is under some large maple trees, shutting out all of the sun and much of the rain. The odor arising is a peculiarly sickening one, and I am quite certain it is a potent cause of disease.

The patient was alive and bright this morning, but the throat is filled with membrane and the complexion ashey in color. I have little hopes of a recovery.

There are in the family, father, mother and grandmother of the sick child, a nursing baby six months old, a hired girl and two hired boys aged about 12 and 16 years.

No others are sick as yet; will report if others are taken. I am trying to take every precaution to prevent the spread of the disease.

Do you think my surmises as a cause correct?

Yours very respectfully,

E. M. BROWN.

STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
RICHFORD, July 5, 1891.

E. M. Brown, M. D.:

MY DEAR DOCTOR:—Your letter reporting a case of diphtheria having been forwarded to me from Rutland is received.

I believe filth to be a *predisposing* cause of the disease. I do not believe in *de novo* diphtheria any more than small-pox *de novo*. I have no doubt but what your case of diphtheria originated from the Highgate cases. Will you carefully investigate the matter and report?

Very sincerely,

J. H. H., Secretary.

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CIRCULAR NO. 1, ISSUED BY THE STATE BOARD OF HEALTH OF VERMONT.

CHAPTER 173 OF THE REVISED LAWS.

Preservation of Public Health.

SMALL POX.

SECTION 3919. If a person is infected with the small pox, the selectmen of the town shall immediately provide a place remote from inhabitants, and remove him to such place, unless, in the opinion of the attending physician, the life of such person would be endangered by the removal; and they shall, by requiring immediate vaccination and otherwise, take measures to prevent the spread of the disease.

SEC. 3920. If a person is infected with the small pox near the line of a town, so as to expose the inhabitants of an adjoining town, the selectmen of the adjoining town may exercise the authority and take the precautionary measures prescribed in the preceding section.

SEC. 3921. The selectmen shall provide physicians, nurses and necessaries for such infected person as the nature of the case requires, at the expense of such person, if of sufficient ability to pay the same, otherwise at the expense of the town in which said person has a settlement, if he has a settlement in this State, if not, at the expense of the town in which such person is.

SEC. 3922. If a person, knowing himself to be infected with the small pox, comes within a town without previously obtaining consent of the selectmen, or if a person knowingly and voluntarily communicates or receives the infection of small pox in a town without the consent and approbation of the selectmen, the person so offending shall be fined not more than two hundred dollars.

SLAUGHTER HOUSES.

SEC. 3923. No person shall carry on the business of butchering in a building without the approbation, in writing, of the board of civil authority, describing the building and limiting the time during which such person shall carry on such business; and if a person carries on such business without such approbation or after the expiration of the time so limited, he shall forfeit not more than five hundred dollars.

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NUISANCES INJURIOUS TO HEALTH.

SEC. 3924. The selectmen shall make such regulations respecting nuisances, sources of filth and causes of sickness within their respective towns as they judge necessary for the public health, and shall destroy, remove or prevent such as may be injurious to the public health; and a person violating such regulations shall forfeit not more than one hundred dollars.

SEC. 3925. When such nuisance, source of filth or cause of sickness is found on private property, the selectmen shall order the owner or occupant thereof, at his own expense, to remove the same within twenty-four hours; and if he neglects to do so he shall forfeit not more than one hundred dollars, and the selectmen may cause such nuisance, source of filth or cause of sickness to be removed and the expense shall be paid by the owner or occupant or such other person as caused or permitted the same.

BURIAL OF ANIMALS.

SEC. 3926. If a person puts, or causes to be put, a dead animal or animal substance into or upon the bank of, so that it is drawn or washed into a lake, pond, running stream or spring of water, and suffers the same to remain, he shall forfeit not more than twenty dollars and not less than five dollars, with costs, to the town in which the offense was committed, to be recovered before a justice.

SEC. 3927. If a person puts, or causes to be put, on the premises of another, or on his own premises, a dead animal or animal substance and suffers it to remain unburied within one hundred rods of a dwelling house or public road, between the months of March and December following, he shall be punished as provided in the preceding section.

SEC. 3928. Grand jurors shall prosecute offenses against the two preceding sections; but prosecutions shall be commenced within three months from the time of the commission of the offense, if the respondent remains during that time in the State.

To the Selectmen :—

Selectmen, by virtue of the duties expressly assigned to them by the laws of the State, as above, are really Boards of Health in each town. In incorporated villages and cities, of course, the trustees and aldermen have preferred jurisdiction.

Hence the State Board of Health appeals to all selectmen and trustees of villages and aldermen of cities, and local boards of health, wherever established in the State, and all health officers, to co-operate in the care of the public health. It is only by combined and extensive action that public health can be maintained. Public health is public wealth. Or, as Froude expresses it, "the common

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wealth is the common *health*, the common well-ness," and then adds, "no nation can prosper long which attaches to its *wealth* any other meaning." Every board of selectmen and every board of village trustees, if they have not already done so, should at once appoint some medical man as health officer, to examine all places where there may be any reason to suspect that causes of diseases are lurking, and generally to give advice in sanitary matters. Of course the State Board will always be ready to advise, assist or act whenever called upon.

Disease and death are inevitable. But a very large proportion of the most common diseases are unnecessary because they can be prevented. Yet the individual is powerless, he cannot escape unless by a fortuitous combination of circumstances. Precautions must be taken by whole communities. As a matter of economy alone it will pay to take thorough measures to prevent the spread of all avoidable diseases. The result of disease upon human happiness may be set aside because the anxieties, the griefs, the anguish, the pains of the sick and the friends are not matters of calculation. But the pecuniary loss to the community is surprisingly great from preventable disease. Take, for instances, typhoid fever. For the ten years ending with 1884 there were an average of 134 deaths each year in this State. This, according to ordinary estimates, would imply that there were, on an average, about 1,000 cases of sickness from this disease each year. But take only those who ordinarily would be able to labor, that is, those between the ages of fifteen and fifty. Among these there were 77 deaths on an average each year, implying 460 cases of disease which recovered. Now, it is well known that very few are able to return to work in less than ten weeks. This would make 4,600 weeks labor lost. If the average of wages is $1 per day, the money value of the loss would be $27,600. In this is not included the loss of labor of friends and nurses, nor the necessary expenses attending so much sickness. Nor is any account taken of those who died, who, if they had lived, would have been worth to the State at least $500 each on an average. So much wealth has been each year wasted, and worse than wasted, which should have been added to the common wealth of the State. And this is only one of the numerous preventable diseases. Among the more common diseases which are declared to be communicable and dangerous to the public health are Small Pox, Cholera, Scarlet Fever, Measles, Diphtheria, Typhoid Fever, Typhus Fever, Yellow Fever, Spotted Fever, Relapsing Fever, Epidemic Dysentery, Hydrophobia and Glanders. Whenever any of these diseases shall have become developed in any locality, the fact of its existence should be reported to the selectmen or other proper authority, who should at once take active measures to prevent the spread of the disease. The precautions to be taken vary somewhat according to the disease. In all cases of death from Small Pox, Typhus Fever, Diphtheria, Scarlet Fever or Measles, the proper authority should strictly forbid a public or church funeral.

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SMALL POX.

The statute law (Secs. 3919 to 3922, inclusive), provides in a general way the manner in which cases of small pox shall be cared for, and its spread prevented by "vaccination or otherwise." If, however, the patient is not removed he should be placed in a room farthest removed from the rest of the family, where is to be had the most complete ventilation and isolation. The room should be previously cleared of all curtains, carpets, woolen goods and all unnecessary furniture. The house should be properly designated by a yellow flag or some other equally conspicuous and significant signal. Communication with the family should be permitted only under close restrictions. All children of the family should be prohibited from attending school or from mingling with others. As small pox is most contagious during convalescence, the patient should not be allowed to mingle with the family or meet others until the scabs are entirely off, and then only after a thorough purification by washing and an entire change of clothing. These precautions are to be as thoroughly carried out in very mild cases and cases of varioloid as in the most malignant cases.

SCARLET FEVER.

It is well known that scarlet fever is essentially a disease of childhood and that it is usually more severe in children under ten years of age. Hence it is very important to protect children under ten years of age from exposure to it. With the exception of vaccination, the same precautions should be enforced as in cases of small pox, the same scrupulous care as to isolation, ventilation and furniture in the room. If scarlet fever is not as disgusting and repulsive a disease as the small pox, it is at least as often fatal. As it is also more contagious during convalescence, and the contagion more particularly liable to be carried by clothing and otherwise, communication with those who have been in the room of the patient should be strictly forbidden. Children of the family should not be allowed to attend school. Books from any public library should not be carried into any house where the disease is. These precautions should be continued until the period of desquamation has passed, and the patient, clothing and house have been thoroughly disinfected. This, even in mild cases, will take at least six weeks. In some cases it will be ten weeks before it will be safe for one who has had scarlet fever to mingle freely with others without risk of giving them the disease. Although it is undeniable that small pox and scarlet fever are transmissible in their earlier stages, yet it is true that mainly the contagious principle resides in the pus, or "matter," and the scab of the one and the exfoliated cuticle or scarf-skin of the other. Hence the risk of carrying it in clothing and other articles, and imperative necessity of insisting upon thorough disinfection of all articles that have been near the sick one.

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MEASLES.

If not as offensive a disease as small pox, or as fatal as scarlet fever, measles is yet as contagious and causes a large amount of sickness every year. During the last ten years there have probably been 15,000 cases of measles in this State, causing three times that number of weeks sickness. The contagious principle seems to be in the atmosphere surrounding the patient, so that a person going into the room of one who is sick with this disease is liable to take it. The contagion can also be carried in clothing and other articles. Hence the same precautions as in scarlet fever should be taken in regard to communication of the family with others, children attending school, books from a public library, etc. But the time need not be as long. Usually about three weeks will be enough to cover the period of risk of exposure, if disinfection is thoroughly employed.

DIPHTHERIA.

It is doubtful whether diphtheria can be transmitted through the atmosphere surrounding a patient. But it is certain that the discharges from the throat and nose do possess the power of producing the disease, and it can be conveyed in clothing and other articles. Hence all the precautions necessary to be taken when scarlet fever and measles are present should be rigidly enforced, particularly as to isolation and communication with families in which the disease exists. As it is well known that filth and foul air from whatever source have a great influence to increase the malignancy of diphtheria, care should be taken to have all cellars, sinks, sewers, cesspools, privy-wells, etc., thoroughly clean and efficiently disinfected.

TYPHOID FEVER.

The main source of typhoid fever is the drinking water. Hence whenever a case of this disease occurs it is the duty of the selectmen, or other proper authority, to examine the condition of all public water supplies, and especially that of the family in which the patient is. The sewers and drainage should also be examined. The contagious principle is contained solely in the excrementitious matters coming from the bowels of the patients. If these evacuations are thoroughly disinfected and buried in the ground there can be no risk of the disease spreading. Of course if the patient has discharges while in an unconscious or stupid condition, or if by accident the body linen or the bed clothes should be soiled, these must be immediately changed and disinfected. The excrements must be buried so far from any well, spring or other source of drinking water that there shall be no possibility of their leaching through the soil into the water which may afterwards be used. Typhoid fever is not transmissible through the atmosphere surrounding the patient, or even by actual contact with the body of the patient. Hence isolation is not necessary, and no restrictions need be placed upon intercourse of the family. Unless soiled by the discharges from the bowels it cannot be transmitted into other places by clothing or other articles.

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TYPHUS FEVER.

This highly contagious disease is very rare in this State. It originates evidently from crowd poisoning. It is developed whenever even perfectly healthy persons are confined for a considerable length of time in a limited amount of air, as on shipboard, where it is termed "ship fever." Once developed, even separate cases are surrounded by a contaminated atmosphere so loaded with the poison that few escape the fever who come within its range. It is not, like the diseases before considered, protective from a second attack; no one is exempt because he has had the disease once. Hence the most rigid isolation must be enforced during the existence of the fever. Fortunately, with proper attention to ventilation and bathing, which are often the only treatment necessary, the disease is ordinarily of short duration.

Other communicable diseases that are dangerous to the public health occur so rarely in this State that it is scarcely necessary to consider them at this time.

SLAUGHTER HOUSES.

It is provided by Sec. 3923 of the Revised Laws that the board of civil authority shall grant approbation, in writing, to "carry on the business of butchering," for a limited time, in certain places. It is obvious that the intent of this law is that the board of civil authority should make such conditions and restrictions as they may think necessary for the preservation of the public health. No slaughter house should be allowed within the limits of any village or city, the distance of location beyond the limits being determined by the configuration of the land and the direction of prevailing winds. Ordinarily the distance should not be less than one mile. It should be distinctly understood that the keeping and slaughtering of all cattle, sheep, and swine, and the preparation and keeping of all meats, fish, birds or other animal food, shall be in a manner best adapted to secure and continue their wholesomeness as food. And that any place, room or building wherein any cattle, sheep or swine have been or are killed or dressed, shall be thoroughly cleansed and purified, and all offal, blood, fat, garbage, refuse and unwholesome and offensive matter shall be removed therefrom at least once in every twenty-four hours, if used continuously, or if only used occasionally, within twenty-four hours after using.

No blood-pit, dung-pit, offal-pit or privy-well should be allowed in any slaughter house.

No pigs or hogs should be kept in the same enclosure with a slaughter house, nor should they be fed, there or elsewhere, upon the offal of slaughtered animals.

NUISANCES.

Selectmen are given power, by Sec. 3924, to "make such regulations respecting nuisances, sources of filth and causes of sickness, within their respective towns, as they judge necessary for the public

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health." Whatever is dangerous to human life or health, whatever renders soil, air, food, water or other drink unwholesome, and whatever building, erection, or part or cellar thereof, is overcrowded, or not provided with adequate means of ingress and egress, or is not sufficiently supported, ventilated, sewered, drained, cleaned or lighted, are really nuisances. House-refuse, offal, garbage, dead animals, decaying vegetable matter, or organic waste substance of any kind should not be thrown on any street, road, ditch, gutter or other public place within the limits of any village or city. No putrid or decayed animal or vegetable matter should be kept in any house, cellar, or adjoining out-building or grounds for more than twenty-four hours.

No pig pen, stable, privy-vault, cess-pool, or reservoir into which any of these, or any water-closet or sink is drained, unless water tight, should be permitted to remain where, by any possibility, their drainings may leak through the soil into any well, spring or other source of water used for drinking or culinary purposes.

C. S. CAVERLY, M. D., Pres., Rutland,
J. H. HAMILTON, M. D., Sec'y, Richford,
O. W. SHERWIN, M. D., Woodstock,
} State Board of Health.

DISINFECTING SOLUTIONS.

Principally suggested by the Committee on Disinfectants of the American Public Health Association:

For the Disinfection of the Discharges from the Patient.

1. *Standard Solution No.* 1.—Dissolve chloride of lime or bleaching powder of the best quality (containing at least twenty-five per cent of available chlorine) in soft water in the proportion of four ounces to the gallon.

2. *Standard Solution No.* 2.—Dissolve corrosive sublimate and permanganate of potash in soft water in the proportion of two drachms of each salt to the gallon.

(NOTE.—1. This solution is highly poisonous. 2. It requires a contact of one hour to be efficient. 3. It destroys lead pipes. 4. It is without odor).

3. *Standard Solution No.* 3.—To one part of Labarraque's Solution (*liquor sodæ chloratæ*—U. S. P.), of hypochlorite of soda add five parts of soft water.

(NOTE.—Competent authority has pronounced this superior to all other disinfectants.)

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For the Disinfection of Clothing, Towels, Bedding and other Textile Fabrics.

4. *Standard Solution No.* 4.—Dissolve corrosive sublimate in water in the proportion of four ounces to the gallon, and add one drachm of permanganate of potash to give color to the solution as a precaution against poisoning. One fluid ounce of this solution to the gallon of water is sufficiently strong. Articles should be left in it for two hours. One gallon of standard solution No. 1 may also be mixed with nine gallons of water, and used in the same way. No article should be allowed to leave the infected room until it has either been disinfected or boiled.

(NOTE.—Corrosive sublimate solution should be kept in wooden or crockery vessels.

For the Disinfection of Water-closets, Urinals, Sinks and Cesspools.

5. *Carbolic Acid Solution.*—Mix one pint of carbolic acid with two and a half gallons of water.

Standard solution No. 4 diluted with three parts of water may also be used in the proportion of one gallon (of the solution) to every four (estimated) of the contents of the vault. Standard solution No 1 would require to be used gallon for gallon of the material to be disinfected. Dry chloride of lime may be sprinkled over the contents of a privy, or standard solution No. 2 may be made up by the barrel, and four or five gallons be applied daily during an epidemic.

For Disinfection of the Sick Room after it is Vacated.

Thorough ventilation for several days, and thorough washing of all surfaces with one of the disinfecting solutions, say one pint of standard solution No. 4 to four gallons of water, or a quarter of a pint of solution of hypochlorite of soda to a gallon of water. The walls and ceiling, if plastered, may be washed with this, and then whitewashed. All dust must be carefully washed (not brushed or swept) away from ledges, cracks, corners and crevices.

Sulphur Fumigation.

To use this effectively, two pounds of sulphur should be burned in a room ten feet square. Every opening in the room, flues, doors, windows, cracks and crevices, must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub containing a little water to guard against fire. A little alcohol or kerosene must be poured upon the sulphur, by means of which it may be ignited. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days.

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CIRCULAR NO. 3.

SANITARY SCHOOL HOUSES.

When it is considered that in the school house a large number of children spend a considerable part of almost every day during the greater part of every year, the importance of the location and plan of the house becomes apparent. Here the children are confined during the period of their growth, when the system is most susceptible to influences harmful or healthful; and here they may contract disease or deformity, which will last through life. Hence it becomes a matter of serious importance to build in accordance with the most approved sanitary rules. Perhaps it may cost somewhat more at first, but it will be far more profitable in the end. True economy consists in furnishing conditions for healthy growth, and not in furnishing conditions for disease and arrested development.

The following suggestions and rules have been compiled from papers and reports of individuals and committees, composed of the most eminent sanitarians, who have devoted their time and study to the investigation of these subjects.

1. *Site:*—

The best location for a school house is on an elevation, from which the ground slopes in every direction, a natural mound or knoll, but not on a high hill. The soil should be gravelly, thus affording a natural drainage. Where these natural advantages cannot be had, the site selected should admit of and have thorough artificial drainage. It should not be in the vicinity of a marsh, nor any stagnant water, nor on filled ground, unless the ground was originally dry and filled with clean gravel. Trees are desirable but not necessary. If they abound they should not be near enough to shade the building, which should get the sun and air freely. Much more light and air are required than for dwellings and shops. The lot should be sufficiently large that not more than one-half of it should be covered by the building, which should be at least sixty feet from any other building. No school house should be built in the vicinity of any mill, factory, machine shop, railroad station or other place where there is likely to be noise or confusion. The social character of a neighborhood and moral nuisances are also sometimes necessary to be considered in deciding upon the location of a school house. Where it is possible the lot should be large and furnished with more or less of the common apparatus for outdoor gymnastic exercises. In England the play-grounds around school houses are more spacious than they are in this country. There it is considered that "a failure to provide for physical culture or to observe the conditions of physical well-being, will vitiate all educational processes and render abortive all attempts to reach the highest intellectual and moral development."

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2. *The Building* :—Plan and Arrangement.

The height of the school building above the ground will depend upon the character of the soil; if it is naturally dry, the building may be near the ground; if drainage is necessary, the building should be put upon an elevated foundation. In any event, free circulation of air under the ground floor should be provided for, and the sub-floor space should be perfectly dry. Basement dryness is of more importance in a school building than in a dwelling, inasmuch as the size of the building and its being often closed and without fire for a season, conduce to dampness and unwholesome rooms.

The material for construction should be the same as that adapted for the best houses. If brick or stone is used, damp-proof layers are important, as well as wainscoting and deeper furring than usual. Buildings should never be more than two stories high. If a public hall for occasional use is desirable a third story may be tolerated for this purpose, but should never be used for regular school work. Thirty-eight by twenty-three feet is about the model size and shape of rooms, according to the best authorities, and about twelve feet in height. These dimensions are determined by laws as to light, sound and capacity. This size is adapted to accommodate forty pupils. Experts in education recognize the gain to the individual scholar by limitation of pupils to forty in each room. Sometimes the necessity of the case may require a somewhat larger room, when four or five feet may be added to the width, which, with the addition of one or two feet to the height of the room, will accommodate fifty-six pupils. School rooms ought never to have a ceiling higher than fourteen feet. About twelve or twelve feet and six inches is a better height. Oblong rooms are usually to be preferred, with length one-third to one-half greater than the width.

The area of window space, if in a city or village with other buildings in the vicinity, should not be less than one-fourth the floor space. In the open country the window space may be somewhat smaller. The window sills should never be placed lower than three and a half feet from the floor, and the windows should extend upward nearly to the ceiling. It is best to have the light diffuse itself from above the level of the pupils. The upper part of the windows and the ceiling serve to send down the light. Porticos or projecting roofs or window ornaments should not be placed on the outside so as to in the least obstruct the light. Windows should be placed on the sides of the room. If the room is not over twenty-four feet wide the windows may be upon one side only, and that upon the left of the pupils as they sit at their desks. Light may be admitted from behind the children, but never in front.

The doors should be wide and open outward, and should be on the opposite side of the room from the windows.

Entries should be roomy and halls wide. All stairways should be wide and straight, or with platforms, but never spiral. Stairs should be of easy ascent. Four or five inches rise with a width of tread of twelve to fifteen inches.

Hard finish is generally best for walls. They should be very smooth, as dust clings to rough surfaces. Paper is too absorbent for school walls.

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No school building is perfect, from a sanitary point of view, which does not contain proper facilities for the care of wraps, overshoes and umbrellas. Provision should be made for drying wet garments; and so the wardrobe should be independent of the school room, and provided with a sufficient number of hooks for each child. Damp garments should be hung up where they will dry. These rooms should not be closets, but such as can be thoroughly ventilated.

A wash room is very convenient, perhaps it may be said, necessary. It need not be large, but should be a separate room. It will greatly promote cleanliness.

3. *Water Supply :—*

Children must at all times have plenty of water. The water supply, then, should be abundant, wholesome and convenient of access. Comparatively few school houses are so situated that pure fresh water can be obtained without resorting to wells. Hence it becomes a matter of consequence that the wells are beyond the possibility of contamination by any sources of filth. If a naturally healthy and elevated site has been obtained, the well may be placed at a distance of not less than one hundred feet from the building. But sometimes even a much greater distance is not safe against pollution of the water. It has been demonstrated that, under favoring circumstances, water, holding in solution poisonous matter, may pass through earth for a distance of over half a mile. The well or spring from which water is taken should not be near any barn-yard, hog-pen, privy, grave-yard or other source of impurity.

4. *Heating and Ventilation :—*

These may be considered together as they are so intimately connected, and as ventilation is so often accomplished by means of the heating apparatus. But neither will be treated of very extensively, and only or mainly in connection with small school houses. Of course when a large building, containing a large number of rooms, is to be constructed, an architect is employed whose special duty it is to be conversant with these subjects and make the plans according to the most approved hygienic methods.

In common country school rooms the ordinary stove is used for heating. This need not be changed, but it should be provided with a sheet iron or galvanized iron jacket, extending high enough above the stove that the air may be well heated, and leaving a space from four to six inches all around the stove. This jacket should be open at the top and closely fastened to the floor at the bottom. A pipe not less than six inches in diameter should pass through the floor under the stove and be carried out through the underpinning to the external air. Thus a current of pure air, from out of doors, warmed by the stove will be constantly poured into the room, and will diffuse itself so that those most remote from the stove will be warm and those nearest will not be overheated.

Windows and doors are the natural ventilators. But they should be used only to flush the rooms with fresh air during recess or after

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school hours. When the jacketed stove is used the foul air may be got rid of by lowering the windows from the top ; or, better still, by raising the lower sash and placing under it a strip of board so that the air may pass out between the upper and lower sash.

It is customary to say that each pupil should have so many square feet of floor space, or so many cubic feet of air space, variously stated at fifteen to twenty square feet, and at 175 to 300 cubic feet of air. But the essential point is that each pupil should have from twenty-five to thirty cubic feet of fresh air to breathe every minute. Of course, the oftener the air is changed the smaller may be the space occupied. But how to change the air without creating unpleasant and dangerous draughts is the grand problem of ventilation. In rooms such as those mentioned above the entire air will, by ordinary means, be changed about three times an hour, without creating an objectionable current. But, to give each pupil the requisite amount of fresh air, it should be changed six or eight times in an hour. Foul air, particularly among children, causes dullness, nervousness, headache, colds, catarrh, and numerous other disorders. Hence foul air must be got rid of in some way. The jacketed stove with the partially opened windows will accomplish this for single rooms, although imperfectly, especially if the rooms are large. But if several rooms are to be heated by a furnace in the basement, special flues must be made for the egress of the bad air. It is better to have the registers for the inlet of warm air on the inner sides of the rooms, and above the middle. Thus the warm air will pass across the room toward the windows, the cool air from which will give a tendency to fall downwards, then flowing along the floor, still retaining considerable warmth, it will keep the feet of the pupils warm, and will pass out of registers near the floor, in the wall of the room, upon the same side in which are the inlets. The registers of egress must be somewhat larger than those of ingress, and must be connected with flues, extending to the roof. and that can be heated, thus creating a current which will draw out the bad air. The smoke pipe of the furnace may be utilized for the heat necessary to create the draught for the outlet flues. Unless the upward draught be very considerable the flues must be very large. As commonly made the ventilating flues, even in rooms supposed to be well ventilated, are so small as to be of very little use.

5. *Drainage:—*

The importance of good drainage is so obvious and so generally admitted that but little need be said upon this topic. Unless the location be elevated and the soil dry and porous, there will be need of artificial drainage. The ground should be thoroughly underdrained so that after a rain the surface will very soon become dry, and leave no pools or puddles of water in which organic matter may putrefy and contaminate the air. And particularly should the ground underneath the building be carefully protected, so that no water from the roofs or from the ground around can penetrate the cellar or the sub-floor space, rendering it damp and unwholesome.

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6. *Privies and Water Closets :—*

These are usually decided abominations, detrimental to the health and often to the morals of the scholars. Still, as they cannot be dispensed with, they must be regulated in a manner to be subject to the least possible objections. Ever since Moses led the Israelites out of Egypt, the disposal of human excrement has been a question of decided interest for mankind, and the world is just beginning to find out that the method which he directed is the best : Cover it with dry earth. Deut. XIII : 12–13. Except well made water closets, the earth closet, properly constructed, is the most nearly perfect of anything yet devised. The essential points are, a receptacle completely impervious to moisture, and plenty of dry earth in powder. The receptacle should be of easy access, so that the contents can be readily removed. It should be large enough to hold the quantity which accumulates during a week, and should be emptied at the end of every week. Dry, finely powdered clay is by far the best, but loam will answer. Sand and gravel are not suitable. In a farming community almost any one can afford to furnish the dry earth and empty the receptacles for the benefit of his land, since, if properly attended to, the contents of the receptacles are no more offensive than dry ashes. In places where water supply is abundant and sewerage is good, water closets are undeniably the most desirable. But these require an experienced plumber, who understands what is necessary. The location of the privies or closets should be near but not in the school building. Separate ones should be provided for the different sexes, and the passage to them, certainly for the girls, should be covered.

7. *Seats and Desks :—*

Seats should be single, and of such height that the pupil's feet can rest on the floor. If too high, the pupil should have a foot-rest. The back of the seat should be curved, adapted to the curve of the body. Especially should the lower half of the spine be supported. The seat should be broad enough to support the greater part of the thigh.

Desks ought to be of such a height that the elbows may rest upon them without displacing the shoulders. The front of the desk ought to be perpendicular to the edge of the seat, or project over the seat for an inch or two. No desk ought to be more than once and one-half the distance from the window that the top of the window is from the floor. The top of the desk ought to incline upwards at an angle of twenty degrees for writing. For reading the angle of forty degrees is better. If the top is not adjustable it may incline at thirty degrees. It ought to support the paper or book at a distance of twelve or sixteen inches from the eyes. It would be well that the desk or the seat, or some part thereof, should be movable at pleasure, so that although the desk usually overhangs the seat, the scholar may be able at any time to stand upright in his place.

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8. *Blackboards :—*

No room where recitations are held can be considered as properly furnished without these necessary accompaniments. And their location is a matter of great importance. They should be placed on the side of the room opposite to the windows, never between, or even upon the same side with the windows. They should be of ample size, and of a dead, not glossy black. Letters and figures, well made and fully two inches in height, cannot be seen distinctly over thirty feet.

A pamphlet has been published by the American Public Health Association upon "School Hygiene" or "The Sanitary Conditions and Necessities of School Houses and School Life," by D. F. Lincoln, M. D. It would be well if every Town Superintendent of Schools, and every district school committee should read this essay. By enclosing ten cents in postage stamps, or otherwise, to Dr. Irving A. Watson, Secretary Amer. P. H. Association, Concord, N. H., he will forward a copy to any address.

A. H. CHESMORE, M. D., PRESIDENT, Huntington,
J. H. HAMILTON, M. D., Richford,
C. L. ALLEN, M. D., SECRETARY, Rutland,

State Board of Health.

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CIRCULAR NO. 4.—PREVENTION AND RESTRICTION OF DIPHTHERIA.

Diphtheria is a contagious and infectious disease, attacking persons of all ages, but affecting children much more frequently than it does adults. It may be communicated from the sick to the well by means of persons, cups or other articles which pass from mouth to mouth, or through the medium of the air, or it may be spread by means of clothing.

So generally is diphtheria regarded as due to unsanitary conditions, that by common consent it is classed among the "filthy diseases;" and when we find it arising, apparently, independently of sources of infection, spontaneously, as it would seem, we may be pretty sure that something is wrong in the health conditions of the home where it is found.

The unsanitary conditions which seem to give rise to diphtheria may be in the direction of the food or water supply; the well may be too near the privy or cess-pool, or sink-drain, or barn-yard, and be polluted by soakage through the filthy soil; or the something wrong may be in the direction of the air supply: the air is re-breathed and poisoned, or a wet and foul cellar is under the house, or sewer gas goes into the rooms, from defective water closets or other fixtures, or from sink-drains, or privies or cess-pools.

When once diphtheria has arisen, the law of simple contagion carries to the rich and the poor, to the cleanly and the uncleanly, but not to all alike. Filth invites disease and gives its germs the most congenial soil in which to develop into pestilence; but cleanliness offers only barren ground for their development.

Diphtheria is a preventable disease. Proper preventive measures are almost invariably followed by the limitation of the disease to the first case or cases. **When diphtheria gets away from the primary cases and makes its escape upon the community, somebody is to blame.** The sooner we accept this as a sanitary maxim, the sooner we shall begin to do our duty as individuals and as communities.

PREVENTION.

When a child or young person has a sore throat, and with it considerable fever, and especially if the breath has a bad odor, it should immediately be kept separate from all other persons, except necessary attendants, until it be ascertained whether or not he has diphtheria.

Keep away from the sources of the contagion. Do not go where the disease is if you can help it; and, above all, do not let your children go where it is. If you do visit a case, bathe yourself, change and disinfect your clothing before you go where there is a child.

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From the dwelling and its vicinity banish all sources of filth, whether of the ground, of the water or of the air. The ground under and around the house, if not naturally dry, should by thoroughly and deeply drained.

Diphtheria does not come from far through the air, therefore do not shut up your houses tightly, thinking thereby to shut out the disease. By so doing you shut *in* the poison of re-breathed air, which paves the way and makes it easy for the poison of diphtheria to be taken.

All influences which cause sore throats probably tend to promote the taking and spreading of this disease.

Hence avoid exposure to wind and to breathing cold, dry air.

Also avoid any article of food or drink which tends to make the throat raw and tender.

Do not wear or handle clothing worn by a person during sickness or convalescence from diphtheria.

Beware of any person who has a sore throat. Do not kiss or take the breath of such a person. Do not drink from the same cup, or put anything of his to the mouth.

Be sure that the drinking water and the milk are pure.

RESTRICTION.

As soon as it is found that a person has diphtheria, he should immediately be separated from the rest of the family, and put into a sunny and well ventilated room, preferably on the upper floor, and as disconnected as possible from other rooms, especially the living and sleeping rooms of children.

Before moving the patient into the room, all needless articles, such as carpets, contents of wardrobes, etc., which would catch the infection, should be removed.

No other person besides the nurse or necessary attendants and the physician should be permitted in the room, and they should take special precautions not to carry the infection. Their communication with the rest of the family should be as restricted as possible.

Plain and distinct notices should be placed upon the premises or house in which there is a person sick with diphtheria.

The selectmen, or health officer, should immediately be notified and should coöperate with the physician to keep the disease from spreading. Children and parents from other houses should be warned; and if they needlessly and obstinately persist in coming, they should be driven away.

Neither the nurses nor any other person should eat or drink anything in the sick room or anything which has been there. Food which the patient has left should be burned.

Cats and dogs should be kept from the sick chamber, or better, out of the house, for their fur can easily carry the infection. These animals, as well as some others, sometimes have diphtheria, and ommunicate it to children.

The dishes which the patient uses should not be used by others, or washed with other dishes. They should be washed by themselves in boiling hot water.

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The utmost care must be taken that the discharges from the mouth, throat and nose do not soil the room or its furnishings. These discharges should be received on pieces of cloth and then burned. If this cannot be done they should be thoroughly disinfected with Disinfectant No. 5, No. 6, or No. 2.

The discharges from the kidneys and bowels should be liberally treated with Disinfectant No. 5, No. 6, or No. 2, and not poured into the privy-vault, but buried, if possible, 200 feet or more from dwelling houses and water supply.

The bed and body clothing should not be mixed with the family wash, but should be put into boiling hot Disinfectant solution No. 4, or No. 5.

No person from a house where there is diphtheria should go into public assemblies, such as schools, churches, or concerts.

Persons who have had diphtheria should not mingle with the public for some time after the last trace of the disease has left the throat and nose, and then not until they and all their clothing have been thoroughly washed and disinfected.

In case of death the body should be enclosed in a sheet thoroughly wet in Disinfectant No. 4 or No. 5, and put into a tight coffin, which should not afterward be opened. The funeral should be strictly private, and in no case should children be permitted to be present.

After recovery or death, disinfect the room with Disinfectant No. 1.

DISINFECTANTS.

No. 1. Sulphur Fumigation.

To use this effectively two pounds of sulphur should be burned in a room ten feet square. Every opening into the room, flues, doors, windows, cracks and crevices, must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub containing a little water to guard against fire. A little alcohol or kerosene must be poured upon the sulphur, by means of which it may be ignited. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days.

No. 2. For the Discharges.

Sulphate of iron (copperas), 3 pounds ; warm water, 1 gallon ; mix. This leaves rust spots on clothing.

No. 3. For Privies, Cess-Pools, Etc.

Sulphate of iron, 1¼ pounds ; water, 1 gallon ; mix.

No. 4. For Clothing.

Sulphate of zinc (white vitriol), 4 ounces ; common salt, 2 ounces ; water, 1 gallon ; mix.

No. 5. Corrosive Sublimate Solution.

Corrosive sublimate, 60 grains ; permanganate of potassa, 1 grain ; water, 1 gallon ; mix.

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Corrosive sublimate is one of the surest destroyers of disease germs known, but its dangerous, poisonous qualities make it unsafe for general use. It could be used instead of No. 2, or one-half this strength instead of Nos. 3 and 4.

No. 6. Chloride of Lime Solution.

Chloride of lime of the best quality, 4 ounces ; soft water, 1 gallon ; mix. This is one of the best and cheapest disinfectants.

No. 7.

Boiling for half an hour is the surest way to destroy infection. Immersion in No. 4, or No. 6, will lessen the danger from the infected clothing until it can be boiled, which should be done as soon as possible.

Some of these directions may seem extreme, but they are necessary, every one of them. It is some trouble to carry them out carefully, but that is nothing compared with the possible results to you if you neglect them.

Whereas, The Vermont State Medical Society has for many years been desirous that a State Board of Health be established, and has been in a large measure responsible for the existence of the present Board, and whereas, it is well known that the utility of the Board depends largely upon the co-operation of the profession throughout the State, therefore

Resolved, That the members of this Society endeavor to lend such aid to the Board as lies in their power, by reporting to the Secretary of the Board all cases of contagious diseases coming under their observation, and by furnishing any other information which may be of service to them and to the State.

C. S. CAVERLY, M. D., Pres., Rutland.
J. H. HAMILTON, M. D., Sec., Richford.
O. W. SHERWIN, M. D., Woodstock.

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CIRCULAR NO. 5.—RULES AND REGULATIONS FOR THE BETTER PRESERVATION OF THE PUBLIC HEALTH, ETC.

The State Board of Health establishes and promulgates the following Rules and Regulations for the better preservation of the public health, and for the protection against infectious and contagious diseases, by the authority given in section 6th of "An Act to prevent the spreading of contagious diseases," etc., approved November 23, 1886.

Selectmen have also the power, by virtue of sections 3919 to 3925 inclusive, of the Revised Laws of the State of Vermont, and it is their duty to strictly enforce these rules in their respective towns. They are, in reality, town boards of health, and the State Board looks to them to efficiently carry out the rules and regulations now promulgated, and will consider them responsible for the proper enforcement of them.

1. Any householder in whose dwelling there shall occur a case of scarlet fever, diphtheria, typhoid or typhus fever, small pox or cholera, shall immediately notify the selectmen or health officer, who shall at once report the same to the Secretary of the State Board of Health.

2. When a physician knows or suspects that any person to whom he has been called is sick of, or has died of, a communicable disease dangerous to the public health, he shall immediately report the same to the selectmen or health officer, who at once shall notify the teacher, or principal of every school, academy or seminary, requesting said teachers or principals to dispense with the attendance of all pupils residing in the family in which such disease exists.

3. It shall be the duty of the physician, and of all other attendants upon person affected with such diseases, to avoid exposure to the public of any garments, or clothing about their persons, that may have been subjected to the risk of infection.

4. No person who has small pox, diphtheria, scarlet fever, measles, or whooping cough, shall attend school or any place of public worship or amusement.

5. Books from a public or circulating library must not be allowed in any house where there is a case of small pox, diphtheria or scarlet fever.

6. Members of any household in which small pox, diphtheria, scarlet fever, or measles exist shall abstain from attending places of public amusement, worship or education, and, as far as possible, from visiting other private houses.

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7. No parent, guardian or master in whose house or family there shall have been a communicable disease dangerous to the public health shall permit any child in said house or family to attend any public, private or Sunday school during or after the cessation of such disease, until the house shall have been thoroughly disinfected and cleansed, and the child shall have a proper certificate from the attending physician, countersigned by a selectman or health officer.

8. Plain and distinct notices must be placed upon the premises or house in which any person has small pox, diphtheria, scarlet fever, typhus fever, measles or whooping cough.

9. The clothing, bed-clothing and bedding of persons who have been sick with any communicable disease dangerous to the public health, and the rooms which they have occupied during such sickness, together with their furniture, shall be thoroughly disinfected.

10. There shall not be a public or church funeral of any person who has died of Asiatic cholera, small pox, typhus fever, diphtheria, yellow fever, scarlet fever or measles, and the family of the deceased shall in such cases limit the attendance to as few as possible, and take all precautions possible to prevent the exposure of other persons to contagion or infection.

11. No meat, fish, birds, fowls, fruit, vegetables, milk, or anything for human food, not being then healthy, fresh, sound, wholesome, fit and safe for use, nor any animal or fish that died by disease, nor carcass of any calf, pig or lamb which at the time of its death was less than three weeks old, and no meat therefrom shall be offered or held for sale as food.

12. It shall be the duty of the occupant of every house in the month of May in each and every year, to cleanse the cellars thereof of all dirt, vegetable and other impure matter, calculated to engender disease, and cause them to be thoroughly white-washed with fresh lime.

13. Swine shall be kept in such a place and manner as not to be offensive to the persons residing in the vicinity ; and their pens and yards must be kept deodorized by the application of dried muck, dry earth, or some other effective absorbent or disinfectant.

14. Whatever is dangerous to human life or health, and whatever renders soil, air, food, water or other drink unwholesome, are declared to be nuisances, and liable to originate or spread contagious diseases.

15. Whatever building, erection or part or cellar thereof is overcrowded, or not provided with adequate means of ingress and egress, or is not sufficiently supported, ventilated, sewered, drained, cleaned or lighted, is declared to be a nuisance.

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16. The collection of refuse matter in and around the immediate vicinity of any dwelling house, or place of business, such as swill, waste of meat, fish or shells, bones, decaying vegetables, excrement, or any kind of offal that may decompose and generate disease germs or unhealthy gases, shall be considered the worst kind of a nuisance, and must be removed or disposed of either by burning, burial or otherwise in such manner that it may not be offensive to the neighborhood.

17. No putrid or decaying animal or vegetable matter shall be kept in any house, cellar or adjoining outbuilding or grounds, for more than twenty-four hours.

18. No slaughter-house shall be allowed within the limits of any village or city, or within fifty yards of any highway, without the written consent of the selectmen.

19. The preparation and keeping of all meat, fish, birds or other animal food, shall be in the manner best adapted to secure and continue their wholesomeness as food.

20. Every butcher or other person, owning, leasing or occupying any place, room or building wherein cattle, sheep or swine have been or are killed or dressed, and every person being the owner, lessee or occupant of any room or stable wherein any animals are kept, or of any market, public or private, shall cause such place, room or building, stable or market, to be thoroughly cleansed and purified. And all offal, blood, fat, garbage, refuse and unwholesome or offensive matter shall be removed therefrom at least once in every twenty-four hours if used continuously, or, if only used occasionally, within twenty-four hours after using, and the floors of such building, place or premises shall be so constructed as to prevent blood, foul liquids or washings from settling in the earth beneath.

21. No blood-pit, dung-pit, offal-pit, or privy-well shall remain or be constructed within any slaughter house.

22. No pigs or hogs shall be kept in the same enclosure with a slaughter-house, nor shall they be fed there or elsewhere, upon the offal of slaughtered animals.

23. No person or company shall erect or maintain any manufactory or place of business dangerous to life or detrimental to health, or where unwholesome, offensive or deleterious odors, gas, smoke, deposit or exhalations are generated, such as tanneries, establishments for boiling bones and dead animals, etc., etc., without the written permit of the selectmen or health officer; and all such establishments shall be kept clean and wholesome so as not to be offensive or prejudicial to public health; nor shall any offensive or deleterious or waste substance, refuse or injurious matter be allowed to accumulate upon the premises, or be thrown or allowed to run into any public waters, stream, watercourse, street, road or public place. And every person or company conducting such

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manufacture or business shall use all reasonable means to prevent the escape of smoke, gases and odors, and to protect the health and safety of all operatives employed therein.

24. The keeper, or keepers, of a livery or other stable shall keep his or their stable or stable-yard clean, and shall not permit a large amount of manure to accumulate at any one time.

25. No pig-pen shall be built or maintained within one hundred feet of any well or spring of water used for drinking purposes, or within thirty feet of any street or any inhabited house.

26. No privy-vault, cess-pool or reservoir in which a privy, water-closet, cess-pool, stable or sink is drained, unless it is water-tight, shall be constructed, dug, or permitted to remain within one hundred and fifty feet of any well, spring or other source of water used for drinking or culinary purposes, unless the surface of such vault, cess-pool or reservoir is at a lower level than the bottom of such well.

27. All privy-vaults, cess-pools or reservoirs shall be cleaned out at least twice a year, once in the spring not later than the 15th of May, and once in the fall not earlier than the 15th of October. From the 15th of May to the 15th of October, they shall be frequently and thoroughly disinfected.

28. All sewer drains that pass within fifty feet of any source of water used for drinking or culinary purposes shall be water-tight; in sandy soil the limit shall be eighty feet.

29. No sewer drain shall empty into any lake, pond or other source of water used for drinking purposes, or into any standing water.

30. Boards of selectmen *may* appoint some medical man as Health Officer of their respective towns; should they neglect or refuse to do so, the State Board of Health will make such appointments.

31. Health Officers shall assist the State Board of Health in carrying out their regulations in relation to the sanitary work of the State, especially regarding epidemic and contagious diseases, and shall make report of the facts thereof to the Secretary of the State Board of Health, as the said Board shall direct.

32. It is also the duty of Health Officers after being notified of the outbreak of any epidemic or contagious disease to see that quarantine regulations are enforced and to have the oversight of cleansing and disinfecting all infected houses, etc.

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DISINFECTING SOLUTIONS.

Principally suggested by the Committee on Disinfectants of the American Public Health Association.

For the Disinfection of the Discharges from the Patient.

1. *Standard Solution* No. 1.—Dissolve chloride of lime or bleaching powder of the best quality (containing at least twenty-five per cent of available chlorine) in soft water in the proportion of four ounces to the gallon.

2. *Standard Solution* No. 2.—Dissolve corrosive sublimate and permanganate of potash in soft water in the proportion of two drachms of each salt to the gallon.

(NOTE.—1. This solution is highly poisonous. 2. It requires a contact of one hour to be efficient. 3. It destroys lead pipe. 4. It is without oder.)

3. *Standard Solution* No. 3.—To one part of Labarraque's solution (*liquor sodæ chloratæ*.—U. S. P.,) of hypochlorite of soda add five parts of soft water.

(NOTE.—Competent authority has pronounced this superior to all other disinfectants.)

For the Disinfection of Clothing, Towels, Bedding and other Textile Fabrics.

4. *Standard Solution* No. 4.—Dissolve corrosive sublimate in water in the proportion of four ounces to the gallon, and add one drachm of permanganate of potash to give color to the solution as a precaution against poisoning. One fluid ounce of this solution to the gallon of water is sufficiently strong. Articles should be left in it for two hours. One gallon of standard solution No. 1 may also be mixed with nine gallons of water, and used in the same way. No article should be allowed to leave the infected room until it has been either disinfected or boiled.

(NOTE.—Corrosive sublimate solutions should be kept in wooden or crockery vessels.

For the Disinfection of Water-Closets, Urinals, Sinks and Cess-Pools.

5. *Carbolic Acid Solution.*—Mix one pint of carbolic acid with two and a half gallons of water.

Standard solution No. 4 diluted with three parts of water may also be used in the proportion of one gallon (of the solution) to every four (estimated) of the contents of the vault. Standard solution No 1 would require to be used gallon for gallon of the material to be disinfected. Dry chloride of lime may be sprinkled over the contents of a privy, or standard solution No. 2 may be made up by the barrel, and four or five gallons be applied daily during an epidemic.

For Disinfection of the Sick Room after it is Vacated.

Thorough ventilation for several days, and thorough washing of all surfaces, with one of the disinfecting solutions, say, one pint of standard solution No. 4 to four gallons of water, or a quarter of a pint of solution of hypochlorite of soda to a gallon of water. The walls and ceiling, if plastered, may be washed with this, and then whitewashed. All dust must be carefully washed (not brushed or swept) away from ledges, cracks, corners and crevices.

Sulphur Fumigation.

To use this effectively, two pounds of sulphur should be burned in a room ten feet square. Every opening in the room, flues, doors, windows, cracks and crevices must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub containing a little water to guard against fire. A little alcohol or kerosene must be poured upon the sulphur, by means of which it may be ignited. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days.

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DISINFECTANTS.

1. *Fire.*—Perhaps the most effectual method of destroying infectious material is to burn it. This should always be done when practicable. Old clothing and bedding, if not too valuable, when soiled with infectious material had better be burned. The matter discharged from the throat and nose in case of diphtheria, that expectorated by consumptive patients, or by patients with whooping cough, should be received on rags or paper and immediately thrown into the fire.

2. *Steam Under Pressure.*—Under a pressure of twenty-five pounds, steam has a temperature of about 240 degrees Fahr., and will destroy the most resistent germs and spores. But except in hospitals it can rarely be used.

3. *Boiling.*—All known disease germs are destroyed by boiling for half an hour. Some spores, however, resist boiling even for several hours. Every thing which can be washed, and is too valuable to be burned, should be put into boiling hot water as soon as soiled, and boiled for half an hour.

4. *Chloride of Lime.*—(Chlorinated lime, bleaching powder). The most resistent germs and spores of all kinds are destroyed by this, prepared as directed for *Standard Solution* No. 1. This solution is, however, quickly decomposed and rendered inert by contact with organic matter. Hence, disinfection may not be accomplished when the infectious material is imbedded in masses of organic matter.

5. *Liquor-Sodæ Chloratæ.*—(Labarraque's solution, chlorinated soda). This is of equal value with the chloride of lime as a disinfectant, and a much more pleasant preparation for bathing the bodies of patients, and hands, etc., of nurses and attendants. To the *Standard Solution* No. 3, add three or four times as much water for bathing. It is liable to become inert if kept too long.

6. *Mercuric Chloride.*—(Bichloride of mercury, corrosive sublimate). This is a deadly poison, formerly known by the name of "ratsbane" and "bug poison." It is relatively cheap, a pound only costing about sixty or seventy cents. The solutions should never be allowed to come in contact with lead, tin or copper. *Standard Solution* No. 2 contains one part in 1,000, and will destroy all germs and spore-containing infectious material, provided that the micro organisms to be destroyed are fairly exposed to its action for two hours. *Standard Solution* No. 4 is much stronger, being one part in thirty-two. But when one ounce of this solution is put into one gallon of water, it is strong enough for ordinary use, being one part in 4,000, which will kill all disease germs which are non-spore producing, such as small-pox, scarlet fever and diphtheria.

7. *Dry Heat.*—Articles that may be injured by moist heat or a disinfecting solution can be subjected to dry heat. But it requires for the destruction of spores a temperature of 284 degrees Fahr. for three hours, which will injure woolen fabrics. In the absence of spores, however, articles may be considered to be disinfected if subjected to a dry heat at a temperature of 230 degrees Fahr. for two hours.

8. *Sulphur Dioxide.*—(Sulphurous acid gas, the fumes of burning sulphur) Fumigation with burning sulphur is efficacious in disinfecting rooms, and clothing if freely exposed, after cases of small-pox, scarlet fever, diphtheria, measles and whooping cough.

9. *Carbolic Acid.*—To disinfect the excretions, the ordinary solution (one pint in two and a half gallons of water) may be used, by putting a pint into the vessel previous to an evacuation from the bowels. For clothing, hands, etc., one part of the solution to two and a half of water is of proper strength.

10. *Sulphate of Copper.*—(Blue vitriol). This salt, used largely in France, is reliable, not as good as the mercuric chloride for a disinfectant, but a better deodorant. One pound is to be dissolved in a gallon of water

11. *Chloride of Zinc.*—For many years this has been a popular antiseptic and deodorant, but its real disinfectant power has been much overestimated. It may be relied upon for the destruction of pathogenic organisms, in the absence of spores, if used in solution of the strength of one ounce to a pint of water. It costs about ten cents an ounce.

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12. *Bromine.*—This may be used in its pure state or in solution. It is antiseptic and deodorant, but scarcely germicidal.

13. *Iodine.*—This has been very popular as an antiseptic. It cannot be used in its pure state but must be dissolved in water by means of the iodide of potassium, or in alcohol as a tincture. The same may be said of iodine as of bromine.

14. *Copperas.*—(Sulphate of iron, green vitriol). This salt is very cheap and hence can be used freely. In solution of from one to three pounds in each gallon of water, it is a good antiseptic, and may be used to prevent infection, but cannot be relied upon for disinfection.

15. *Freshly Slaked Lime, Charcoal, etc.*, have been extensively used. They are good absorbents and perhaps deodorants, but have very little power, if any, as disinfectants.

A. H. CHESMORE, M. D., PRES., Huntington, Vt.,
J. H. HAMILTON, M. D., SEC'Y, Richford, Vt.,
C. S. CAVERLY, M. D., Rutland, Vt.,
} State Board of Health.

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CIRCULAR NO. 6.

The State Board of Health establishes and promulgates the following rules and regulations for the better preservation of the public health and for the prevention of the spread of epidemic and contagious diseases, by the authority given in section 6 of an act entitled "An Act to Prevent the Spreading of Contagious Diseases," approved Nov. 23, 1886, which reads as follows:

"This Board shall have authority to *promulgate and enforce* such regulations for the better preservation of the public health in contagious and epidemic diseases as they shall judge necessary; and any person or persons or corporation neglecting or refusing, after having been duly notified, in writing, to comply with the requirements of such regulations shall, upon conviction thereof, pay to the treasurer of the State a fine of not less than twenty-five dollars nor more than one hundred dollars; said offense to be prosecuted for before any court of competent jurisdiction in the State."

To PHYSICIANS:

1st. When a physician knows or suspects that any person to whom he has been called is sick, or has died, of a communicable disease, dangerous to the public health, he shall immediately report the same to the selectmen or Health Officer appointed by them.

2d. It shall be the duty of the physician to avoid exposure to the public of any garment or clothing about the sick person that may have been subject to the risk of infection, to require strict isolation of the sick person and make use of disinfectants in the sick room and house, and after such sick person is convalescent to require a thorough disinfection or fumigation of all clothing, furniture and rooms that have been subjected to infection.

.....M. D.:

Dear Doctor—This is to call your attention to your duties as set forth in the foregoing regulations, and to ask your full and hearty coöperation. Respectfully,

A. H. CHESMORE, M. D., Pres.,
J. H. HAMILTON, M. D., Sec.,
C. S. CAVERLY, M. D.,
} State Board of Health.

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CIRCULAR NO. 7.—PURE WATER AND HOW TO SECURE IT.

Food, air and water are the three essentials of life—pure food, pure air, and pure water are the surest safeguards against diseases of every kind. Pure water is never found on the surface of the earth, but finds its way to the surface through springs and wells. Good, pure drinking water contains carbonic acid and atmospheric air in solution, gases derived from the earth through which it flows, and foreign mineral matter in solution which can be tasted.

The commonest impurities are decomposed organic matter, animal and vegetable; mineral impurities are occasionally found. Animal matter in a state of putrescence, when taken into the system, may produce fever or other symptoms. The constant use of such water sometimes causes disease even when the quantity is small. Some persons are more susceptible than others to the influence of this poison, their own system either causing or accelerating changes which had not been noticeable before the introduction of the disturbing element.

Decomposed vegetable matter acts in much the same way, disordering the system or causing special forms of disease.

Mineral impurities are suspended or dissolved mineral matter. These, if of sulphur or iron, although giving a peculiar taste to the water, are not injurious unless present in too large quantities. But even a small quantity of lead seriously affects the human system.

The taste of water fresh from the well is by no means a sure guide as to its purity. If it contains a large amount of organic matter just undergoing decomposition there may be taste and odor, or its organic impurities may have been so far destroyed as to cause no unpleasant taste or smell, and yet it may remain dangerously contaminated.

The fact of water being AGREEABLE to those accustomed to its use is no indication of its purity. It may be CLEAR yet not pure, apparently healthful yet containing the germs of disease and death.

In speaking of this same subject a noted surgeon of the U. S. army and sanitarian says: "To demonstrate the wholesomeness of a water supply which has been contaminated with sewage, it is not enough to show by analysis that it contains but a small amount of organic matter, but it should be shown at the same time that none of the diseases which are generally recognized as transmissible by the water supply prevail in the district where the water in question is used. There are many difficulties in the way of effecting this demonstration, but chief among them is the well attested fact that certain of these diseases frequently *do* prevail in the district where the water in question is used."

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When it is known that a large quantity of an infected matter in a water supply will spread a disease with epidemic virulence, it is not inconsistent with our knowledge of the essence of such diseases to infer that a small quantity, even though diffused through an immense volume of water, will strike its victim when the glass of water which contains the essential particle is ingested.

Every water supply should be *well protected.* The basin of a spring be kept free from all organic matter—its sides and edges should prevent the inflow of surface washings.

Wells should be lined, so as to exclude surface drainage. They should not be dug in the vicinity of large trees, as their roots may penetrate the clay and form channels which admit of inflow of surface water. No matter how carefully the well may be lined, it should be at a proper distance (150 feet at least) from all sources of impurity.

Cisterns are much used as storage for drinking water. The purity of cistern water depends largely on the cleanliness of the shedding surface and conduits. The first water of a rain, especially after seasons of continuous drought, should not be allowed to flow into the cistern, and the main supply should be derived from long and heavy rains rather than from occasional showers.

Cistern water requires filtering, and this is easily accomplished by putting a partition of lightly burned brick into the cistern. Such a filter should be frequently cleaned.

If a water supply be from a river, pond or lake, no sewage should be allowed to empty into them. The surface drainage of large towns and cities is sufficient to contaminate the water and endanger its use.

A public water supply should be frequently examined under different circumstances and from different locations. The general supply which has been good may come to be impure by the introduction of sewage. The pipes may become fouled or the reservoirs may contain growths of minute forms of plant life, or water long impounded in large quantities may become deadened for want of oxygen or air. Thus water from a good source may in its distribution become impure.

In the march of progress the wells and springs of sparsely settled communities give way to the aqueduct and public water supply. The selection of a village or city water supply is a matter of vital importance to the lives and happiness of its people. It is often made to depend more upon its feasibility from an engineering or financial standpoint than upon its fitness from a sanitary standpoint.

The pond, lake or stream that supplies a village is only a storage reservoir in itself. Its water is drained from a natural watershed and this surface from which the water drains and filters to the main body used for a public water supply should be carefully watched.

It is well known that typhoid fever epidemics have frequently been traced to a single case near the source of such a water supply.

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Communities whose water is derived from such sources should systematically examine through their water commissioners or other officers the country whose natural drainage is to the body of water used as a supply. In Massachusetts no drainage, sewage, or refuse matter of any kind is permitted to be discharged into any water course or any of its feeders within twenty miles above the point whence the supply is taken. The twenty mile limit is of course somewhat arbitrary, and might be modified by the size of the stream, its fall, and other factors.

Vermont towns should not lack for good water supplies. But though our hills are sparsely settled and the mountain brooks and ponds furnish apparently pure water, every such source should be officially examined often, and jealously guarded against pollution.

The test as to color, odor and taste will aid somewhat as indicating whether further examination is necessary, or whether it is wise to use the water without the precautionary measure of boiling, filtering, etc.

Color test: Fill a clean, long bottle made of colorless glass with the water; look through it at some black object; the liquid should appear perfectly clear and free from all suspended matter. A turbid or muddy appearance indicates the presence of soluble organic matter or solids in suspension.

Odor test: Empty out part of the water, leaving the bottle half full, cork and leave for a few hours in a warm place. Shake the bottle and remove the cork and critically smell the air contained in the bottle above the water. If it has any odor, especially if the odor be the least repulsive, the water is unsafe for use. Boiling water sometimes evolves an odor that otherwise does not appear.

Taste test: Water fresh from the well is usually tasteless, even though it contain some putrescible organic matter. Water for drinking purposes should be and remain tasteless, even after it has been warmed, since warming often develops a taste in water which is tasteless when cold. If water has a repulsive or even disagreeable taste it should be rejected.

Another simple water test is Heisch's, which is made with sugar: Into a perfectly clean pint bottle, put five or six ounces of the water to be tested, to which add ten or twelve grains of pure granulated sugar, tightly cork and set in a window exposed to the light, but not to the direct rays of the sun. The room should be moderately warm, say at a temperature of 70° F. If in twenty-four or forty-eight hours the water becomes cloudy or milky it is unfit for use.

After a few days if the water be very bad, upon removing the cork it will emit the odor of rancid butter. The little specks settle to the bottom of the bottle, where they apper as white flocculent masses. This test does not always decide the question as to the purity of water, for while cloudiness in the water certainly indicates unfitness for use, a negative result does not *prove* the water to be good, as the test often fails to indicate organic matter really present if phosphate be absent.

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Hager's is test a simple one and is made in the following manner: Pour into a half pint of the water to be tested a tablespoonful of clear solution of tannin (a heaped teaspoonful of tannin to a gill of rain water). If no turbidity occurs within five hours the water is good; if turbidity occurs within one hour the water is decidedly unwholesome.

If there is the least suspicion that a water supply is impure from inflow of sewage or surface drainage, it should not be used until it has been *boiled* or *filtered*.

Boiling water for half an hour destroys all germs of disease and renders it safe for use. It is well to filter it afterwards, however as it is thus ærated and made more agreeable as drinking water.

A simple and practical filter can be made from a bottle: Take a long-neck bottle; crack off the bottom by tying a string saturated with turpentine around the bottle at the point to be broken and set fire to the string and the bottle will be ready for use. Place in the bottle a layer of cotton; the cotton should be worked in water, preferably warm water, in order to remove the air. Drop a wad of cotton into the neck of the bottle so that the mouth will be covered; the layer of cotton should be from two to three inches in thickness. This should be well pressed down, not too tightly, else it might filter too slowly, neither too lightly, or the water may form channels and thus prevent its being filtered. When the filter becomes clogged it can be cleaned by boiling and rinsing, or perhaps it is as well to replace it with new.

A sheet of filtering paper such as is used by druggists, and a glass or tin funnel, will furnish a good means for filtering water on a small scale. A fresh sheet of paper should be used every day.

The most reliable filter for general use is the "Pasteur Filter."

C. S. CAVERLY, M. D., Pres., Rutland.
J. H. HAMILTON, M. D., Sec., Richford.
O. W. SHERWIN, M. D., Woodstock.

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CIRCULAR NO. 8—ON THE NATURE AND PREVENTION OF CONSUMPTION.

Consumption, phthisis, tuberculosis have each the same meaning. The disease is caused by a species of bacterium, called a bacillus. This bacillus is in the discharges of the patient that has consumption; the discharges from the nose, the throat, the bronchial tubes and lungs, in the urine and stools. It may be in the flesh of animals suffering from the disease and in the milk of tuberculous cows. To produce the disease the bacilli must enter the air passages or alimentary canal of a *suitable subject.* In other words, the causes of consumption are two-fold : predisposing and exciting.

A. PREDISPOSING CAUSES.

Among the predisposing causes are these :

1. Heredity. Children of tuberculous parents present suitable soil for the growth of the specific microbe, *i. e.*, can easily acquire the disease.

2. Narrow and shallow chests. Persons who inherit or acquire such chests, who have small expansive powers, are good subjects for consumption.

3. Poor nourishment, scant clothing and damp, dark, ill-ventilated rooms. People who are constantly under-fed, whose clothing is insufficient for our winter and spring climate and who work or sleep in small, close apartments, easily succumb to the poison.

B. EXCITING CAUSE.

The active poison which sets up the disease is the bacillus mentioned, and it may reach the victim in the dusty air of the sick room, the street or railroad car, the public hall, work shop and store, in fact wherever the consumptive coughs and expectorates; or he may take it into his system with his meat or milk.

Consumption is an infectious and a contagious disease. Like all such diseases it may be prevented.

Following the classification of its causes the rules for its prevention may be summarized as follows :

1. Persons whose parents, uncles or aunts, grandparents or brothers or sisters, have had consumption should avoid confinement with any one who has the disease. They should have open air employment as much as possible. They should study means of developing the chest, keeping the digestive organs healthy, in fact, keeping in as good general health as possible.

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2. Those who have narrow chests should adopt means to expand and develop the respiratory muscles. They should practice systematic inflation of the lungs in the open air. Stand erect, with shoulders and head thrown back and draw in a deep breath slowly, through the nostrils ; hold it as long as possible and then let it out gradually. Repeat this operation several times each day. Meantime by accurate measurements about the chest, on the level of the nipples, observe the improvement in the powers of expansion.

3. Plain, nourishing food, woolen underwear (except perhaps in June, July and August) and confinement in dry rooms free from smoke and dust, are essentials to health which suggest themselves to everyone.

The management of those who have the disease, so as to prevent those with whom they come in contact from acquiring it, is the most essential point in preventing consumption.

Persons who have consumption should be isolated as far as practicable from those whose constitutions predispose them to the disease. Inasmuch as the sputum of the sick person contains the germs of the disease in great numbers, great pains should be taken to prevent careless expectoration upon floors where it may dry and easily become a part of the air of the room.

So many persons in the early stages of consumption are able to travel about and attend to their ordinary occupations, that everyone should understand how easily such persons can become sources of danger to others susceptible to the disease. They unwittingly spit upon the floor wherever they are, and the sputum drying in time is inhaled by someone in the dust laden air and becomes the mysterious factor in causing an unaccountable case of consumption.

Those who have charge of shops or factories should be sure no consumptive is spitting on the floor. The teacher in school should be on her guard. Those who control public halls, stores and cars, especially sleeping cars, should place cuspidores convenient to their patrons and be sure they always contain a disinfectant. The following solution is inexpensive and efficient :

Dissolve two drachms each of corrosive sublimate and permanganate of potash in a gallon of water. This solution should be kept in a cuspidore wherever there is reason to think a consumptive expectorates. It is an efficient disinfectant, but is poisonous.

Everyone who has a persistent cough, whether he has consumption or not, should never spit carelessly on a floor or carpet of any room in which others are confined and should exercise great care about the use of soiled handkerchiefs.

The care of those confined to their beds and rooms with the disease is all-important to the attendants and those who may afterwards occupy the room. All expectoration should be into cloths that can be burned, or into cuspidores that contain the above disinfectant. The air of the room should be constantly changing and the clothing and bedding and eating utensils of the patient should be soaked in a disinfectant after use. Boiling water will answer the purpose. The diarrhœal stools should be disinfected. House-

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hold pets are susceptible to the disease and should not be allowed in the room, or if one develops a cough, it should be immediately killed, for it may carry the disease to human beings.

The room in which a consumptive is confined should never have a carpet, and the floors, woodwork and all cracks and crevices should be washed thoroughly every week.

Consumptive mothers should not nurse their babes.

These rules may seem to some unnecessarily severe, but those who have observed the fearful mortality from this disease will understand the importance of taking advantage of preventive measures.

Consumption is to-day the most fatal disease known to mankind. Since the cure of the disease is not fully demonstrated and within the reach of all, and since its prevention is possible, everyone should understand enough of the character of consumption to use intelligent precautions against its spread.

The State Board of Health asks the hearty coöperation of the physicians of the state in this important work—of restricting the spread of consumption. Local health officers may question whether they are justified in enforcing the restrictive measures recommended in other infectious diseases. Health officers and physicians generally may however do much good by informing the public of the known infectious character of this disease and adopting the suggestions contained herein in their management of the disease.

C. S. CAVERLY, M. D., Pres., Rutland,
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SYNOPSIS

OF THE PROCEEDINGS OF THE NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH, WASHINGTON, D. C., MAY 2 AND 4, 1891.

The Seventh Annual Meeting of the National Conference of State Boards of Health was held at the Ebbitt House, Washington, D. C., May 2 and 4, 1891.

The meeting was called to order at 10 A. M., Saturday, May 2, by Dr. J. N. McCormack, President.

The following States were represented:

Alabama, Dr. Jerome Cochran; Connecticut, Dr. C. A. Lindsley; Illinois, Dr. John H. Rauch; Indiana, Dr. C. N. Metcalf, Dr. S. S. Boots; Iowa, Dr. J. C. Shrader; Kentucky, Dr. J. N. McCormack, Dr. George Beeler; Louisiana, Dr. S. R. Olliphant, Dr. L. F. Salomon; Maryland, Dr. C. W. Chancellor; Michigan, Dr. John Avery, Dr. Victor C. Vaughan; Minnesota, Dr. P. H. Millard; Missouri, Dr. George Homan; New Hampshire, Dr. Irving A. Watson; New York, Dr. Lewis Balch, Dr. O. Donohue; Ohio, Dr. C. O. Probst; Pennsylvania, Dr. Benjamin Lee; Rhode Island, Dr. Albert G. Sprague; South Carolina, Dr. H. D. Frazer; Tennessee, Dr. Berrien Lindsley; Vermont, Dr. J. H. Hamilton; West Virginia, Dr. N. D. Baker; Wisconsin, Dr. J. T. Reeve; Province of Ontario, Dr. P. H. Bryce.

Mr. J. W. Douglas, President of the Board of Commissioners of the District of Columbia, was introduced by the President of the Conference. He gave the delegates a very hearty welcome, and spoke of the new ordinance compelling all houses where certain diseases are known to exist, to be placarded. This law met with decided opposition at first, but soon the people realized that it was for the good of all, and now not only submit willingly, but complain if Health Officers fail to enforce quarantine regulations.

Dr. Bryce of Toronto wired that it was not possible for him to be at the morning session, so the order of proceedings was somewhat changed to accommodate him.

The first question taken up for discussion was one proposed by the State Board of Health of Louisiana: 1. What are the requisites of a thorough system of quarantine and maritime sanitation, in the light of present scientific attainment? 2. What are the best methods for self-protection of individual States from the introduction of pestilence through States which have no adequate quarantine?

The Tennessee State Board of Health Bulletin gives the following report of the discussion, taken from Washington papers:

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The discussion was opened by Dr. J. Cochran of Montgomery, Ala. He said that the largest number of cases of yellow fever occurring in the United States had come by ship from Cuba. Still, even in the season when yellow fever is prevalent in Cuba, not more than one in twenty ships is infected, and when the disease is not epidemic there the number is less than one in a hundred. This was a curious fact in connection with the matter. The proper place, he thought, for quarantining was not New Orleans, but the port of Havana. A disinfectant he defined as anything that would kill or render innocuous the zymotic germs of disease. Disinfectants are of four classes—extreme heat, extreme cold, certain chemical reagents and cleanliness and ventilation. Yellow fever is a disease of hot weather and tropical countries, and is completely eradicated by cold. If it is driven away by the frost of an ordinary winter then there is no reason why cold artificially produced should not be equally efficacious. It is also clear that extreme heat will kill the yellow fever germ. It cannot withstand a temperature of 250 degrees Fahrenheit, and it is doubtful if it could survive a heat of 212. He also discussed the value of certain chemical disinfectants, the fumes of sulphur, bichloride of mercury, and others.

There is but one port on the gulf where vessels of the more dangerous class are taken in hand by local boards. This port is New Orleans. A quarantine of ten days at any port on the gulf would be a complete embargo on all commerce between that port and tropical ports. Five days would be almost as fatal, and in the case of Havana steamers a detention of a few days is all that is possible, but disinfection should not take up much time. Fumes of sulphur, flooding with bichloride of mercury, thorough cleaning and ventilation or the application of wet and dry heat should be used. In the case of iron ships they can be treated satisfactorily by chemical means, but sodden old wooden ships cannot be so easily treated, and it is doubtful if they can be properly disinfected. It is impracticable to disinfect cargoes without removing them from the vessels, but fortunately cargoes are not very likely to be infected. It is the bedding and the baggage that do the most damage, but they can be conveniently handled.

The question that Dr. Cochran discussed was really merged into another proposed by the Board of Health of Alabama. It was as follows:

1. Given a vessel with a cargo from Central or South America or the West India Islands, can such vessel and cargo be disinfected without discharging the cargo? 2. Can such cargo be disinfected thoroughly and without damage after it has been discharged?

This was made the subject of a paper by Dr. S. R. Olliphant of New Orleans, President of the State Board of Health, who said that he was present to maintain the affirmative side of the question. In New Orleans cargoes are disinfected thoroughly without removal or damage.

In the case of most of the cargoes from Southern ports any delay would be ruinous, for the importations are largely of a perishable nature. Heat is recognized as the most important factor in disin-

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fection, and the clothing and bedding of the crews and other articles to be treated are placed on racks in cylinders and heat is applied to a temperature of upward of 212 degrees, where they are kept for some time, and then steam, with a pressure of seven pounds to the square inch, is admitted. Thermometers placed in the interior of the bedding and other articles show that it is as hot there as at any other point in the cylinders.

While this is being done the decks are being washed down with a solution of bichloride of mercury, and the holds are treated with the fumes of sulphur dioxide. Dr. Olliphant then went on to describe in some detail the apparatus used at the Mississippi stations for fumigating vessels. He said that with this apparatus he believed cargoes have been and can be disinfected thoroughly without removal from the vessel. Some articles, like rags and baled goods, might not be so well treated, but such articles are not allowed to enter during the quarantine from the countries mentioned in the question.

Dr. L. F. Salomon, Secretary of the State Board of Health of Louisiana, read a comprehensive paper upon the second of the questions proposed by the State Board of Louisiana. Some of the ports of the Atlantic and Gulf of Mexico, he said, have costly disinfecting apparatus, others maintain a strict non-intercourse during the quarantine, while in some the means are utterly inadequate. It was with reference to the latter class that he wished to speak. If passengers from an infected port are allowed to enter any of these ports without detention or disinfection and come direct to Louisiana, what, then, would be the value of the costly plant that Louisiana maintains and the detention she insists upon at the cost of her commerce? They did not desire to raise a quarantine, say against certain ports in Florida, but they did object to passengers taking advantage of the laxity in that or any other State to evade the necessary restrictive measures that New Orleans maintains.

The next subject for discussion was the question proposed by the State Board of Health of Ohio:

1. Should State Boards of Health have control of the sanitary arrangements of all school buildings to be erected within their boundary? 2. What is the best plan to secure such control?

Discussion opened by Dr. Louis Balch of Albany, N. Y.

Dr. Balch took the position that local Boards of Health, and not State Boards, should control and look after the sanitary arrangements of school buildings. He gave many examples to show the difficulties a State Board would meet with in attempting to remedy the many evils connected with school buildings.

Dr. Probst: Dr. Balch has mistaken the drift of the question proposed by Ohio. He has confined his remarks to school buildings already erected, and to the various nuisances arising in school life. It is the school buildings *to be erected* that we would urge should be under the control of some central authority. This need not necessarily be the State Board of Health, although it is to be supposed that this Board will better understand the sanitary requirements of school buildings than any other. In our State the

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matter of erecting school buildings and the ventilation, heating and lighting of the same, is left entirely in the hands of school boards or school directors—men often guiltless of any knowledge of sanitation or the sanitary requirements of school buildings. Especially is this true of the smaller towns and country districts. It has seemed to us that it would be advisable to require the plans of all school buildings to be submitted to the State Board of Health, or to some other State authority, and to have its approval before allowing the buildings to be erected.

As for the inspection of school buildings already erected, our laws require our local Boards of Health to do this semi-annually, and we would not wish to have this changed.

The question was further discussed by Dr. McCormack, Dr. Balch and others.

Adjourned until ten o'clock Monday.

SECOND SESSION.

The President announced as the first order of business for the second day the discussion of the question proposed by the State Board of Health of Kentucky. What should State and local Boards of Health teach, and what should they do to prevent consumption? Dr. Bryce opened the discussion by reading the following paper:

HOW CONSUMPTION IS SPREAD, AND MEASURES FOR ITS PREVENTION.

Dr. P. H. Bryce, M. D., Sec'y Provincial Board of Health of Ontario.

In view not only of the fact of consumption being of all causes the one producing the greatest number of deaths in temperate climates, wherever settlement is advanced, but also because of public attention having recently been specially directed to the experiments whereby it was hoped Dr. Koch had obtained a sovereign remedy for the disease spread over the known world, it is proper that we should anew point out the paramount importance of the public realizing the nature of the conditions under which, in every-day life, the disease gains a foothold in the individual and of how people generally can do much to lessen the dangers to which they are exposed.

1. HISTORY OF THE DISEASE.—Consumption means a wasting or consuming of the physical organism, and owing to this received the Greek designation, phthisis (a wasting). Owing to little nodules or tubers appearing in the lungs and other tissues of the body, it has been called tubercle, and is now scientifically designated tuberculosis. The real nature of the disease has been vainly sought by physicians from the time of Hippocrates, who believed it to be a pus disease originating in the brain, down to within the

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last twenty years, when biological studies began to throw some light upon its probable cause.

So long ago as 1761, Morgagni and his school believed in the contagion of consumption; but this view has not been generally held till the present day, when, through direct experiments, Villemin, in 1866, showed by inoculating rabbits with tuberculous matter, that the disease could be artificially produced, has its infectious character been established.

He concluded:

1. "Tuberculosis is a specific disease.
2. It is an inoculable disease.
3. It may be successfully inoculated in rabbits from man.
4. It belongs, therefore, among the virulent affections, and takes its place in classification with small-pox, scarlet fever, and more especially with glanders."

He declared that the disease arises by germs suspended in the air, or contained in the peculiar tuberculous matter. The development of the science of micro-biology or bacteriology has only served to confirm Villemin's conclusions.

"By these investigations of the past the stage had been quietly set for the final scene in the history of tuberculosis." Koch had solved the problem of separating or isolating individual micro-organisms, and in 1882 gave to the world his memorable work on "The Ætiology of Tuberculosis." In it he described the cause of consumption or tuberculosis as being a germ or microscopic plant in the shape of a slender microbe rod, five times as long as broad, generally curved in shape, with rounded ends, and provided with spores (seeds) which represent its permanent form. These were found by him in the tubercles or nodules, from the lungs and the brain of man, from inflamed scrofulous glands, joint inflammations, from the chalky nodules of the lungs of animals, the hog, ape, guinea pig, rabbit and other animals. Ten years have served only to confirm Dr. Koch's first conclusions, and have greatly extended our knowledge regarding the susceptibility of animals to the disease, and of many conditions under which the disease is propagated and disseminated. Dogs, cattle, chickens and other fowls have all been found subject to tuberculosis; while its dissemination by means of the flesh and milk of animals has recently been proven by indubitable evidence.

2. Prevalence of the Disease.—It will not be wondered at that a disease with a history so ancient, should, during so many centuries, have found its way into every portion of the habitable globe, wherever the conditions were such as to make its existence possible. That it has spread amongst all civilized races, through favoring conditions, will be shown later on; that there are few families in all Europe whose ancestors have not at some time or other suffered from it, will probably be admitted, though that there are many existing families who have no history of ancestral taint for several generations, abundant evidence would seem to prove. This being admitted, and the affinities of the disease with glanders and leprosy

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being assumed, the comforting conclusion is forced upon us, that as compulsory destruction of glandered horses has eradicated this disease from many communities, and as segration or isolation of lepers has practically cast this disease out from amongst Anglo-Saxon races, so consumption, in some perhaps far off and ideal condition of human society, may similarly become a matter of only historical interest to the physician and statistician.

As the causes and contagiousness of consumption have become known, so its hereditary nature becomes less insisted upon, and the possibility of the disease being induced becomes proportionately prominent.

While the reduction of the death-rate from phthisis in those countries where modern sanitation has gained a sure foothold is most satisfactory, yet the scientific investigations of recent years have shown that the existence of phthisis is by no means limited to the human race. As long ago as 1846 Klencke urged the probability of the milk of tubercular cows being capable of spreading the infection. And in France and Germany rigid inspection of dairy cows is required. That such inspection is required will be gathered from the following statements:

In Edinburgh, of 660 cows, 37 had mammitis (or 6 per cent probably, tubercular).

Dr. Cruikshank, in 1889, in the report of the Agricultural Department of the privy council, states from his own observations and experiments that:

(1.) Cows with tuberculosis of the udder are to be found in dairies in this country.

(2.) The milk of these cows is, as a rule, mixed with the general supply.

(3.) The milk, in cases of udder tuberculosis, contains tubercle bacilli.

(4.) Rabbits inoculated with or fed upon milk containing tubercle bacilli, contract tuberculosis.

From these facts it is reasonable to conclude that there may be danger from using the milk of cows with tuberculous udders, and therefore strict inspection of dairies should be enforced.

That, however, this may not be sufficient to ward off all danger, is gathered from the statement of Prof. Nocard, at the Paris congress of 1888, to the effect that it is almost impossible to tell when the udder has become involved, until towards the last stage of the infection.

The recent very complete experiments reported by Dr. Ernst, of Harvard University, give some idea of how great this danger from milk may become.

In February last he appeared before the committee on public health of the Massachusetts Legislature, and gave evidence on the results of some experiments made at the instance of the society for promoting agriculture, and conducted by Dr. A. K. Stone. He stated that of 1,200 to 1,300 answers to a circular all but two expressed their belief in the possibility of transmitting tuberculosis by milk. He has records of probable infection of children from

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the milk of tuberculous mothers, and cases of infection from a tuberculous cow. Veterinarians give instances of infection of calves from tuberculous cows, and he has in his experiments in the most positive way proved the extreme infectiousness of milk in cases of tuberculous cows.

Dr. Ernst started out with the intention of determining, if possible, the infectiousness of the milk of cows where the udder did not appear diseased. One hundred and twenty-six distinct and separate examinations of the milk from different cattle were made —each examination meaning three or four days' work. As the result of careful examination, out of 126 series of cover glasses, the bacillus tuberculosis in milk coming from cows having no tuberculous udders at all (shown by post mortem) was found in 16 cases, or in 13 per cent.

"By inoculation of the same milk in rabbits and guinea-pigs, in 74 inoculations we produced 6 cases of tuberculosis, the inoculation being from only one to three drops of milk. This means in over 8 per cent in rabbits, and in over 13 per cent guinea-pigs.

"From feeding experiments with 12 pigs, nearly 50 per cent became tuberculous, and of 23 calves, 8 or 33 per cent became tuberculous."

Examination made of samples of milk collected from the city supply of Boston similarly showed, both by inoculation and microscope, even in the mixed milk taken from a number of cows, the presence of the virus of tuberculosis.

That this is possible may be judged from the recent experiments of Forster, who has found that bacilli of tuberculosis live in milk at least ten days.

Not only is tubercle prevalent in milch cows, but the inspection of carcasses intended for food, carried on especially in France and Germany, also shows a very notable percentage of tuberculous animals.

It was found in Saxony that tuberculosis increased with age in cattle, nearly half the cases being in cattle over six years of age.

Another fact of extreme importance has been proved by Bayard, who, in 1889, found that the ratio of frequency of occurrence of tuberculosis in men and animals in different districts was almost parallel in both cases.

The absolute necessity for enforcing sanitary inspection and improvements is seen from the investigations of Hirschberger, who injected guinea-pigs with the milk of tubercular cows. While 55 per cent of these died of tuberculosis, he was able to find the bacilli of tuberculosis in the milk in only one instance.

Poultry, as has been pointed out, are very subject to the disease.

3. PREDISPOSING CAUSES.—While much has been said and written on this subject, daily evidences go to show that unsanitary conditions under all circumstances, and understood as applying to every state and stage of human existence, are the largest factor in the causation of consumption.

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(a) *Influences of Heredity.*—Popular and professional opinion have both accorded to heredity the principal exciting cause; but the most scientific teachings of the present day are that all that is inherited is a tendency due to imperfect development, not of organism in its gross or composite form but in the structural or cell elements of its tissues. It will be manifest that if the delicate mother has a child weak at birth, it is probable in the very nature of things that it will be imperfectly nourished by her, and the innate tendency will berather developed than lessened. That this is true seems to be borne out by the fact of the enormous numbers of children dying within the first year or two of birth from tuberculosis of the intestinal tract and neighboring glands.

Cornill has shown that the bacilli are taken into the system without any necessary abrasion of the mucous membrane, and that the intestinal tract should be the common avenue of infection in children will be accepted without discussion.

The mal-nutrition which plays so fatal a part in those with a tendency, as infants, we can see that the tendency is by no means at an end with the teething period.

Everywhere, but especially in the dwellings of the poor, is seen crowding with uncleanliness, and food, poor both in amount and quality and in its preparation.

The following from the Local Government Board Report for 1889 shows the necessity for attention to this source of disease: "Milk continues to be the chief subject of analysis; out of 26,344 samples of various articles of food, drink and drugs, no less than 10,859 were of what professed to be milk, of which 11.9 per cent were condemned, while in one of the London district, St. Pancras, out of 129 samples, no less than 55, or nearly 43 per cent, were condemned."

The following instance illustrates the enormity of the crime of adulteration and the inadequacy of the fine to prevent adulterating.

"In another case in which the milk vendor stated that he rarely sold more than a farthing's worth at a time, the sample taken was found diluted with 15 per cent of water, but the magistrate considered that one shilling was an adequate fine. On this decision the public analyst comments as follows: 'It is these small portions of milk which are used to fill the bottles of young children, and are often diluted by the parents after the purchase, and thus it is impossible to say how weak the milk becomes before the same is used, but it is not difficult to understand why the mortality amongst the children of the poor is so great.'"

As might be inferred, the dangers minimized by the small amount of milk used by the poorer classes are, on the other hand, increased from their milk supply, of the poorest quality, being more likely to come from dairies inferior both as regards the healthfulness of the cows and the cleanliness of their surroundings. The high mortality amongst the children of the poor may fairly be charged, in a large part, to the marasmus arising from mal-nutrition due to insufficient and unwholesome food.

Under these circumstances it is plain that whatever inherited weakness there may be, the subsequent conditions result in a lessening of the natural resistance of the system to the disease.

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Councilman well illustrates the difference in the resisting power of different individuals by the amount of connective tissue formation thrown around infected points, as a cautery or miliary tubercle. He says:

"In some cases (in autopsies) almost nothing of this is seen and the disease passes rapidly into inflammation and caseation. These differences show themselves in different organs of the body and indurated and healed apices of lymph and bronchial glands are common."

Referring to the assumed predisposition in combating hereditary tuberculosis, he further says: "All conditions of life which produce a low state of vitality in the system predispose to consumption."

Turning then to some of these, in addition to what has been said *re* improper and deficient food, we would place, first—

(*b*) *Overcrowding.*—The following statistics *re* increase of general mortality according to the population per acre, is of interest: James T. Hammach, F. S. S., Assistant Superintendent of Statistics, Registrar-General's office, speaking of the relation between density of population and mortality from consumption, says: "The facts about to be adduced will show that density of population, so far as being an unimportant element with regard to the mortality from consumption, is in fact a very potent agent in producing that fearful and destructive malady.

"Overcrowding is of two kinds: (1) On the superficial area; (2) in cubic space; and either may exist independently of the other. In the country where there is no overcrowding, a laborer's cottage may be so crowded by its inmates that disease may break out; while in the case of model lodging-houses and many well-constructed public institutions, it is quite possible, by a suitable construction of buildings, to have a dense population living healthily because occupying a large cubical space.

"Thus, in the districts with the least density, the deaths from consumption were 375, and in those of most density, 485 to 100,000 living; while other lung diseases caused 914 deaths in the densest, against 659 in the least dense districts out of the same numbers living—the deaths out of the living, not the proportion they bear to the mortality from all causes, being the true index to the fatality of particular diseases."

In the Registrar-General's report the mortality from different diseases in London and twenty-four other city districts with an aggregate population of 3,769,000, was contrasted with the mortality from the same diseases in counties containing a population of 3,559,000, chiefly engaged in agriculture.

The statistics already quoted, showing the number of deaths amongst the women of the agricultural class in England, as compared with men, show the malign influences of indoor life, the ratio being 230 women to 205 men; and of the greater mortality of industrial operatives, the ratio being 467 to 664, fully illustrates two points, that with the decreased resistance of the system, due to industrial pursuits, is associated the increased danger due to greater

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exposure in an atmosphere impure and containing the bacilli of tuberculosis.

"Mager, from Bavarian statistics, estimates the proportion of deaths from phthisis between town and country at 100 to 61." (Hirsch.)

This increase of the phthisical amongst the industrial classes is due not alone to the increased dangers of infection, but to the nature of the occupation. "Dusty trades," says Wynter Blythe, "are specially liable to produce tubercular disease."

Dr. C. Lombard states that of 1,000 deaths of adults from consumption, they could be classed as follows:

Occupations with mineral emanation	176
" " various dusts	145
Sedentary life	140
Workshop	138
Hot and dry air	127
Stooping posture	122
Sudden movements of arms	116
Muscular exercise by active life	89
Exercise of voice	75
Working in open air	73
Animal emanation	60
Occupations in which watery vapor is breathed	53

Similarly, according to Hirsch, "Smith has ascertained for one thousand persons treated for consumption at the Brompton hospital, that seventy per cent of them had been in the habit of spending their time in overcrowded, hot and dusty places indoors."

"The same circumstances seem to account for the strikingly common occurrence of phthisis in nunneries, seminaries and such institutions, in evidence whereof a number of observations have been brought forward by Foucault."

Finally, I may state that in the 1890 report of the Inspector of Prisons and Public Charities in Ontario, where the public institutions have, by all observers, received high commendation, the aggregation of population would seem to produce similar results. Thus, of a total population of insane asylums, amounting to 3,500, having 231 deaths, or sixty-six per 1,000, there were twenty-nine due to phthisis, *i. e.*, forty-four per cent.

Of the total number who died, 153, or 66 per cent, had been in the asylum over eighteen months, but no data are given showing what proportion of those who died from phthisis died within that period.

Influence of Soil and Climate. Says Hirsch, *re* pneumonia: "Elevation and configuration, situation on the coast or in the interior, geological character and the like, are all irrelevant in themselves; they have a significance for the pathogenesis in so far as they determine the climate or the sort of weather in any locality; and it is to be keeping that fact in mind that we may explain the contradictory conclusions which have been arrived at through attending

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too rigidly to each of the factors named, as if it could be an element in the causation by itself."

This must be similarly stated with regard to their influence on the prevalence of phthisis ; while this writer very properly states, after a statistical study of mortality tables of different countries, " that circumstances of climate are, on the whole, of merely subordinate importance for the limits of that distribution ; that the disease occurs *cæterius paribus* in all geographical zones with uniform frequency—that in many regions the number of cases has gone up considerably without any corresponding changes in the climate, but under circumstances of another kind." The mean level of the temperature, therefore, has no significance, but it exercises a very decided influence on the course of the disease ; for it runs a much more rapid and pernicious course in tropical countries than in higher latitudes.

Hirsch further affirms that " severe and sudden changes of temperature from day to day have little influence on their own account. No doubt we have to take into account a fact of importance for the question before us, viz., that all those regions have an absoe lutely dry climate. The circumstances are naturally different in the case of a damp climate, subject to great variation of the temperature, circumstances which come out most decidedly in equatorial and sub-tropical regions."

Regarding the influence of ground water upon the prevalence of consumption, while it is very difficult to separate the influence of different factors, still evidence seems sufficient to make us conclude that this is an important factor in the prevalence of consumption.

Bowditch and Buchanan, after extended researches, especially by the latter, have affirmed this influence ; and Buchanan remains of the opinion that the exceptions to the rule worked out by him simply indicate that other ætiological factors besides the influence of soil come into the account under the given circumstances—and seem to neutralize the benefits even of the most favorable condition of soil.

An interesting point seems to have been determined from the Ontario statistics, thus : The health districts 6 and 7 present two very decided differences of physical surface conditions. East District 6 is a central plateau averaging nearly 1,000 feet above the sea, fifty or more miles from the Great Lakes, and having a soil largely gravelly loam ; while District 7 is the Niagara peninsula, between Lakes Erie and Ontario, about 700 feet above the sea, flat and having a soil largely of post-glacial clays. The latter has been, till recent years, very malarious, while the former has practically never had intermittent fevers.

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An analysis of the deaths from phthisis, in 1881, gave the following result:

	Percentage of total deaths.	Ratio per 1,000.
District 6	8.5	1.02
District 7	12.7	1.64

These latter figures are, to me, very convincing, for the reason that in neither district are there any large towns, while the great bulk of the population in both is engaged in agricultural pursuits, is of the same race and equally industrious and intelligent.

Setting forth, therefore, in brief form the conclusions based upon this statistical study, I would say—

1. That we must recognize the disease phthisis as beyond question a contagious disease, belonging to the category wherein are placed glanders and leprosy.

2. That assuming this to be true beyond question, the attitude we must, as officers of health, assume, is to treat it as such, and hence must examine into what practical measures are to be taken by us for preventing it, and, as far as possible, limiting its dissemination from those centers where we find it existing.

3. Arguing by inferences fairly drawn from the numerous statistics already presented, I conclude that we must primarily regard the question of dealing practically with the problem as being one having, in an especial sense, the qualities of a sanitary crusade.

4. This, I infer, means that the extinction of phthisis must be looked for by our urging that to deal with it successfully means, as with diphtheria and other diseases of its class, we must endeavor:

(*a*) To prevent it by removing the causes which promote it.

(*b*) By so regulating the habits and lives of those affected with it as to prevent them from becoming sources of infection to the healthy.

(*c*) By the establishment of hospitals and sanitaria, where those infected may have the best possible opportunities of being cured of the disease.

5. Referring to these points in their order, I would say as regards the prevention of the disease, we must look to the private or family home of the people.

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Here the matters specially to be inquired into are:

1. The removal of dampness, both under and around houses, as also the removal of all wood or other organic matter tending to decay or promote fungoid growth.

2. The establishing of efficient and complete plumbing and drainage.

3. The introduction of a pure water supply.

4. The maintenance of purity of the atmosphere of the house by cleanliness, ventilation and abundance of sunlight.

5. Proper and equable heating of the living rooms.

6. Attention to the clothing of people, whether in the house or out of it. It must be clean, non-conducting and sufficient.

7. The use of nutritious and wholesome food, notably of animal foods, as meat, milk, etc.

6. This means that we must follow the people to :

(1) The school, and see that those desiderata required for the healthy home be had in the school.

(2) The work room and shop, where there is the constant difficulty of overcrowding and uncleanliness.

(3) The trade or occupation, notably, into our woolen factories, where animal materials are handled ; to the works where stone-cutting, grinding, etc., are carried on ; and to those where effluvia and poisonous particles are given off, as in painting, card-glazing, arsenical manufacturing. In this direction, indeed, our labors must be simply never-ceasing, for the dangers to health are almost as multifarious as the different industries carried on.

(4) The municipal home.

Here we have to deal with the large problem of municipal sanitation. This means, (*a*) town drainage ; (*b*) town sewerage ; (*c*) town paving ; (*d*) public water works ; (*e*) inspection of filth nuisances ; (*f*) compulsory notification of cases of consumption.

B. This means the removal of consumptives from daily contact with others in public institutions, in work-shops, etc. ; (*g*) sanitary and medical education of the people in the homes of such, as to the danger of personal contact.

The numerous details on this point must naturally be effective to the degree that public sanitation acquires an influence over the person and in the home, and to the degree that the medical profession, in their private practice, insist on the danger of infection and on the carrying out in the homes of measures to limit this.

The last point is one which specially belongs to our work, viz. : the management of municipal hospitals for consumptives, and of sanitaria.

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In centuries past lazaretos were numerous in Europe, the confinement of lepers was compulsory, and as a result leprosy can scarcely be said to belong to the category of disease among civilized people. There can be no logical reason why municipal and State government aid should not be given to hospitals specially appointed for treating consumption. I do not think it is either practical or advisable that we should teach or urge that segregation of consumptives in such should be made compulsory, but there are abundant reasons why the existence of such homes, where the poorer classes can live and be treated, should everywhere be made available.

The question of how far these views can be carried into practice will depend directly upon the appreciation which the public has of the dangers to be apprehended and of the means to be taken to avoid such.

It is within the scope, but not within the time allotted, to discuss on what basis such can be carried out; but it must suffice to say that curative institutions for consumption must be essentially sanitaria, where equable climate, dry, pure air, sunlight, out-door work and exercise, gymnastics, and, indeed, every measure going to increase the resisting power of the system may be had to the greatest extent, which any climate makes possible.

Dr. Vaughan said he agreed with the views of Dr. Bryce in nearly every particular. There can be no doubt but that the disease is contagious, and caused by the bacillus tuberculosis; but another element must enter into its production, for, without doubt, the germs of the disease are widespread, and all of us must, at times, receive these germs into the system. The germs are most frequently disseminated by means of the sputa, but when the bowels become affected, as they so often do, they are also present in the bowel discharges. State and local Boards of Health could accomplish great good by teaching the people the danger connected with the sputa and fecal discharges of consumptives, and how properly to disinfect them. Dr. Vaughan was in favor of consumptive hospitals, and thought thorough isolation of cases would eradicate the disease.

He said that while he recognized a possible danger in tuberculous meat and milk, he was inclined to believe their importance as a means of spreading disease, had been greatly overestimated.

Dr. Balch spoke in favor of all efforts to secure improved sanitation as a means of combating consumption. It was an undoubted fact that improvements in drainage and in the ventilation of houses and workshops had done much to lessen the prevalence of the disease. "Isolation of diseased persons is all very pretty in theory, and would probably be very effective in practice, but it cannot possibly be done." He told of the difficulty he had encountered in causing the removal to hospitals of persons suffering with small-pox, a disease all dreaded, and said this indicated the impracticability of removing consumptives to hospitals. If consumptives were allowed at large, and he saw no way of preventing this, he thought it would not be possible to secure disinfection of their sputa.

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Dr. Salomon related a case showing the infectious character of consumption and the length of time the germs may retain their vitality. The case was related to him by an intelligent man in New Orleans, and while the doctor had not verified the facts, he considered them to be true. A family moved into a house in which there had been a death from consumption. The father occupied the room in which the first case had died. He contracted the disease and died within two years. One of the sons then occupied the room, and he also contracted consumption and died. The room was not used for some time when the second son moved into it, and he also contracted the disease and died. The house was then shut up and offered for sale, but was not disposed of for several years. It was finally sold, and the person who occupied the room in which the other cases occurred took consumption and died. The room was then thoroughly cleaned and disinfected, the walls scraped and re-kalsomined and from that time on no other cases occurred in the house.

Dr. Homan said that at a recent visit to a certain health resort he was struck with the number of cases of consumption reported among the residents. The rooms were fitted up with heavy carpets and thick curtains, well calculated to receive and retain the infection of the disease, while disinfection, apparently, was not practiced.

He thought more attention should be given to these matters at the various health resorts. He suggested that consumptives could provide themselves with cloths for receiving sputa, to be burned as soon after using as possible. This is the best means of disposing of infectious sputa; and the people would understand us better if we used the term "destruction of sputa," instead of disinfection.

Dr. Beeler said that consumption was undoubtedly now much more prevalent among the negroes than it was before the war. He attributed this to the overcrowded and illy-ventilated dwellings in which the negroes, especially those living in cities, now dwell. The race is undoubtedly much more susceptible to the disease than formerly, and their habits of life are such that the germs of consumption are indefinitely preserved in their dwellings, when once introduced.

Dr. Bryce, in closing the discussion, said he was well pleased to observe that the majority of the conclusions of his paper had been so well sustained by the members of the Conference. He did not contemplate the compulsory isolation of consumptives, but to provide hospitals where the poor would gladly go to be treated.

A large number of our workshops are, from lack of proper ventilation and other causes, conducive to consumption. Public authorities should be able to regulate such places; and when one of the workmen shows evidence of the disease, in the interest of his fellow-workmen and for his own sake, he should be removed.

Every city could afford to have at its outskirts a place where such persons could go, and by proper arrangements for treatment, fresh air and good food, many of these might recover. Physicians, householders and employers should be required to report all cases of the disease, and health authorities could then inquire into the

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sanitary conditions of dwellings and workshops, which, possibly, were responsible for the disease.

On motion of Dr. Bryce, it was voted to appoint a committee of three to report upon the measures to be recommended for the prevention of consumption.

The chair appointed as members of this committee, Dr. P. H. Bryce, Dr. L. F. Salomon, Dr. Victor C. Vaughan. Dr. Irving A. Watson and Dr. Henry B. Baker were subsequently added to this committee.

The next question taken up was:

"Would the appointment of medical Health Officers for counties in place of township officers, and paid for devoting their time exclusively to public health work, be advantageous and practicable?"

Dr. C. A. Lindsley opened the discussion by reading the following paper:

The first thought this question suggests is that such a practice would develop a body of sanitarians much superior to any which the township system could possibly produce. In that one result would be found a large measure of advantage.

The administration of public hygiene in these days is not any longer to be successfully undertaken by any good citizen, however much he may be esteemed by his fellow townsmen for his skill as a blacksmith, his honesty as a grocer or banker, his fair-mindedness as a justice of the peace, or even for his judgment as a family doctor. Public hygiene is not now a matter of diet and flannel, nor of taking cold.

Public sanitation is taking on a scientific character. Its administration is based on principles which are more or less settled and fixed. The spread of infectious and contagious diseases is governed by recognized natural laws. It follows, therefore, that the control of those diseases and the promotion and conservation of the public health is only to be undertaken successfully with a full knowledge of these laws and of the means suggested by such knowledge.

The above statement, reduced to its simplest terms, reads—a Health Officer requires a special education and training.

The special education and training implies a business, an occupation, a means of earning a living, an object worthy of such preparation.

The ideal Health Officer is one who has had a good medical education as an indispensable foundation for his special work. It is almost equally important that he should have the experience of some years of general practice as a further basis of preparation, because he should be qualified to be an authority in the diagnosis of those contagious and infectious diseases which are dangerous to the public; and also because such experience, and the matured age which it implies, will be an additional influence in winning the confidence of the people whom he serves.

Supplementary to such acquired qualifications, he should be a man with the natural gifts of a sound judgment, of high integrity of character, of clear and quick perceptions and especially of such ready tact in managing affairs as to command the respectful con-

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sideration of the public. These are qualifications of no mean order. They represent a higher standard of acquired and natural ability than the average man possesses. But the sort of man so described corresponds well with the duties and responsibilities of the high functions of his office.

To him are entrusted the highest interests of man in the social state. He is the appointed guardian and custodian of the public health, and in that capacity one of the chief factors in the promotion of public prosperity and general happiness, for there is nothing so disastrous to the public welfare, nothing so productive of personal misery and suffering as disease and death.

A nation whose people are physically feeble, or which is subject to frequent epidemics, cannot be said to be prosperous in any true sense.

Looking, then, at the question from a standpoint which takes in view the rare qualifications necessary for a good Health Officer, the preparation for his duties, and the magnitude and importance of the interests involved, it seems self-evident that it is for the best public good that the true Health Officer should find full occupation in the exercise of his official functions; that one qualified as he should be for such high and grave responsibilities should not have his attention diverted from his serious obligations to the public by being obliged to earn a subsistence in other pursuits.

It seems right and fitting that the man who has been educated and trained for the office should be utilized to the best advantage in the public interest.

Thus the question presents itself to my mind in a speculative way.

It remains to notice the practical application of these reflections.

I assume that in the interests of the public a Health Officer should be nothing else in a business or professional way.

All experience teaches that it is incompatible with the public interest that he should be a practitioner of medicine; or else that it is incompatible with his own interest that he should be a Health Officer in the same community in which he practices.

A long experience in the administration of public hygiene has impressed me with the immovable conviction that a Health Officer who is never criticised and found fault with, who makes no enemies, who is not heartily cursed and sworn at by his profane neighbors, is of no practical use as a Health Officer. And, on the other hand, a Health Officer who is faithful to his public duties, impartial and resolute in his official acts, will gradually, steadily and surely surrender a large share of his patients to the care of his professional competitors.

The two pursuits cannot be harmoniously joined in the same town.

Here, then, is a serious practical difficulty with town Health Officers. In the first place, every town does not possess an available and competent man. He should be chosen always from the medical profession; no others are fully qualified for the office. But if it be attempted to unite in one person the special duties of

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medical practitioner and Health Officer, it soon inevitably happens that there is a conflict between public duty and personal interest, and one must be betrayed or the other will surely suffer.

The wealthy landlord will not meekly receive an order from his family physician to overhaul the plumbing in his tenement houses, to drain the cellars, to remove offensive cesspools, etc., etc., and so make the dwellings of his tenants safer habitations. After receiving such orders that wealthy landlord will call upon Dr. Smith to attend his family, or perhaps Dr. Health Officer, foreseeing that result, will prudently omit to send the order and the tenants will continue to endure their wrongs because it is not the personal interest of the only party who can protect them to do so.

But under the town system that combination of the general practitioner and town Health Officer is the only practicable method.

The town is not only too narrow a field for a man of the required capacity, but it is also too limited for the best use of such service and for the best results.

Public hygiene deals not alone with local conditions. It has to do with the welfare of populations settled over wide areas of territory, and under such varying conditions that the common good of the whole cannot be attained without a comprehensive acquaintance with the mutual relations and interests which the separate towns or communities within those areas bear to each other.

There are undertakings essential to the promotion of the general public health which require concert of action on the part of several more or less separated communities. It is hard to believe that the wisest measures will be proposed by Health Officers whose official duties are limited to the narrow confines of their own towns and whose conceptions of such are generally even more limited. It is not reasonable to expect that men whose services to the public in this line are usually gratuitous or very badly paid, will or can give such studious and careful attention to the sanitary wants not only of their own towns but of their sanitary relations to other towns, as to be competent and wise counselors for the best good of the whole. On the other hand, it often happens that a town Board of Health, seeking only the selfish interests of its own citizens and regardless of others, proceeds to do things which are directly injurious to the health and welfare of adjoining towns.

From the nature of the existing facts and from a knowledge of the principles and laws which should govern in the general administration of public hygiene, it is self-evident that the greatest good to the greatest number will never be realized from separate, unsystematized and independent Town Boards of Health. Town boards and town officials have their uses and proper functions, which are of great value, and in any plan of operations will be found to be essential to the best success. But the work of Town Boards needs direction and unification.

Wherever the common interest of several towns is involved, that will be best subserved, if the efforts undertaken be under the direction of one mind which has intelligent and comprehensive knowledge of their mutual relations and needs.

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The general must command the operations of the army. The colonels and majors, the captains and lieutenants must act in concert to accomplish his plans or the army becomes a mob.

It may be urged in this connection that the State Boards of Health should be the directing power, the commanding general. That, I believe, is true; although they are not all constituted with such powers. Several of them are like that of Connecticut, being only an advisory board and having no mandatory powers at all. But even if the State Board is authorized to be commander-in-chief, there is a long space between the State Board and each little Town Board. There is no possibility of bringing them into such close relations that its authority can be exercised in the most practical and useful way. It requires the intermediate grades of officials to make a useful connection between them. And here the County Health Officers would form the connecting link. The territory under the jurisdiction of the County Health Officer would not be so extensive that he could not, in a reasonable time, become personally acquainted with its topography in matters affecting health. He could, in many instances, by personal investigation, discover and expose the origin of primary cases of communicable diseases, and by forcible illustration persuade and instruct the public mind. His practical experience would be of great value in arresting and controlling epidemics, if they occurred, but of still greater value in preventing them.

The time has fully arrived when communities and populations should accept the fact that the proper protection and care of the public health is a most important public duty; that its due performance is so dependent upon a scientific knowledge of methods that it can only be successfully accomplished by trained and qualified officials; and that there is great economy in providing for this service in the best and most efficient manner.

Another and great advantage, which would be difficult to estimate, because it is one of growth and development and would be enhanced with every year's experience, is that which would come to the State from possessing a body of educated sanitarians, equal in number to its county divisions, and each familiar with the hygienic conditions and sanitary needs of his own jurisdiction.

Such men, selected for their special fitness, holding their office by appointment, and not subject to the caprice of popular elections, but confident of their position, unless by removal for cause, devoting their time and best energies to their duties, would form a bureau of information which might be of the highest benefit to the State Board, and through it to the people's health.

If now we review the points which have been presented, to wit: The nature of the work to be done, the qualifications required of those who do it, the impracticability of associating it with other pursuits depending upon public patronage, the hindrances and difficulties resulting from limiting independent sanitary jurisdictions within town boundaries, and the positive advantages of broader territorial supervision, and, finally, the immeasurable benefit which such a body of educated sanitarians, devoted to their work and familiar

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with every portion of the State, could confer upon it, leaves no doubt in the mind of the speaker that the question should be answered in the affirmative.

The paper was discussed by Drs. Balch, Cochran, Chancellor and others.

Adjourned to 3:30 P. M.

THIRD SESSION.

At this session the subject of discussion was "The advantage of organization of Rivers Conservancy Commissions, composed of State and Municipal Health Boards, for the protection of streams against deforesting and pollution at their sources and along their course."

This question was proposed by the Provincial Board of Health of Ontario.

Dr. Salomon of Louisiana opened the discussion by reading an excellent paper. He offered the following resolutions:

Resolved, That it is the sense of this Conference that the pollution of streams is attaining such magnitude that early action should be taken by State and local Boards of Health looking to its prevention.

Resolved, That a committee of three be appointed to consider the best means of securing the formation of Rivers Conservancy Commissions, composed of State and local Boards of Health and to recommend such legislation as may be necessary to secure the desired result.

Resolved, That said committee report at the next meeting of this Conference.

Dr. Chancellor of Maryland made a speech on the subject. Drs. Bryce, Metcalf, Watson, Lindsley, Reeve, Reynolds and Lee also spoke. Dr. Reeve of Ohio proposed the following as supplemental to the resolutions already before the Conference:

Resolved, That this committee be requested to consider and report upon the sanitary value, especially to municipalities, of the purification of water in polluted streams, either by the distance which such polluted water has traveled or by means of filters or storage beds, or by any other artificial methods.

This was accepted by Dr. Salomon. The President said that the committee would be named at next session.

The next question was proposed by the Michigan State Board of Health; it was in reference to programmes for meetings of the Conference. This was discussed at some length, but finally carried over to another year.

Dr. Oliphant extended a cordial invitation to the Conference to hold their next meeting in New Orleans. The Secretary made a statement of the financial condition of the Conference. On motion

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of Dr. Salomon, it was voted to assess each State and Provincial Board of Health ten dollars, to be forwarded to the treasurer.

Adjourned to 8 P. M.

In the evening it was voted to leave the time and place of the next meeting to the officers of the Conference. The Conference then proceeded to elect officers.

Dr. J. M. McCormack was elected President, Dr. C. O. Probst, Secretary and Dr. Henry B. Baker, Treasurer.

After officers for next year were elected, Dr. Vaughan gave an entertaining talk on "What recent developments have been made in laboratory work of practical value to Health Boards?"

Dr. Vaughan said if a Health Officer wants a sample of water examined he sends him from the laboratory a sterilized bottle. Determinations for hardness, ammonias, nitrates, nitrites and chlorides are made. Plate cultures are also made. At first he endeavored to study each germ present, but found that this took too long—weeks and months. Now, when the water comes in he immediately makes a plate culture and inoculates a tube of beef tea with a drop of the water. In twenty-four hours he injects some of the beef tea into the abdominal cavity of a white rat. If toxicogenic germs are present the rat will probably die in twelve to twenty-four hours. Cultures are then made of the spleen, liver and kidney of the rat and compared with the plate cultures of the water. Corresponding germs are given further study. In this manner he was able to make a report on the water within seventy-two hours. It was not altogether satisfactory, but more so than chemical analysis. He could not say that the germs which killed his rats would kill man, but people will not want to drink water that will kill rats. Rats are hard to kill, and the ordinary water germs will not do it. One hundred and nineteen official reports have been made so far, and in thirty-two instances toxicogenic germs have been found. They are usually found in water which has apparently caused typhoid fever. Duluth has just had about 1,500 cases of typhoid fever. We found a sewer within 500 feet of the intake pipe of their water-works. An examination of their drinking water showed it to contain poisonous germs. Dr. Vaughan said he had also been working on poisonous cheese. He had not in three years found cheese containing tyrotoxicon. Many contained a poison which kills cats but has no effect on man. Public sentiment, he said, was in favor of the laboratory.

Dr. Bryce stated that they had secured some funds for laboratory work. Hydrophobia in the Province, last summer, had created a sentiment in favor of such work. He had learned of a case where a dog, suffering with hydrophobia, had bitten some cows and pigs and finally his master. The animals showed signs of paralysis of the muscles of the pharynx and larynx. He secured the head of a pig that was bitten and endeavored to inoculate rabbits with the cord. He had failed, producing only septicæmia. The same experience was repeated with the head of one of the cows.

They had lately had an outbreak in hogs of a disease attended with gangrene in the joint just above the hoof. The disease

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is communicable and acted somewhat like charbon. They had found what seemed to be the germ of the disease. He said they would try Dr. Vaughan's method of water analysis.

Dr. Vaughan, in answer to a question, said he did not believe that typhoid fever only comes from a pre-existing case of the same disease. He thought water contaminated with the excretions of healthy persons might cause typhoid fever. He said sewage might flow long distances in streams without mixing with the water. Little cities ten miles below Detroit have had typhoid fever, which he attributed to pollution of the water supply by sewage of Detroit. Dr. Vaughan said he thought we had many kinds of typhoid fever due to different germs. He had failed to find Eberth's germ in water that had caused typhoid. He said he believed that one case of typhoid fever would produce another, but not that every case must have a preceding one. He considered it a dangerous theory to teach that water must be specifically contaminated to produce typhoid fever. We should teach that filth in itself is dangerous.

The committee on Consumption presented the following

PRELIMINARY REPORT.

To the President and Members of the Conference of State Boards:

GENTLEMEN:—Your committee begs leave to report the following resolutions:

1. That it is the opinion of this Conference that tuberculosis is a zymotic disease; that its germs are developed within the blood and tissues of man and various animals, and that these germs are capable of an existence external to the body for a number of months, especially in dried sputum, and in places where least exposed to the free action of the atmosphere and sunlight.

2. That the germs of tuberculosis are conveyed in various ways to persons and animals, the principal media of these being:

(*a*) Dust containing dried sputum.

(*b*) Food, either contaminated with infected particles or the flesh of tuberculous animals.

(*c*) Milk from phthisical mothers and tuberculous cows.

3. That unsanitary conditions are the prime factors tending to the development and dissemination of the disease, such as:

(*a*) House and soil dampness.

(*b*) Lack of sunlight and bad ventilation.

(*c*) Bad plumbing and house drainage.

(*d*) Overcrowding in living rooms, in schools, in workshops, in public institutions, etc.

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4. That the disease is undoubtedly disseminated through the neglect to destroy or disinfect the sputa of the phthisical, distributed as this infectious matter is.

(*a*) On infected linen (dangerous to washer-women), clothing, carpets, etc.

(*b*) On the floors and walls of houses, workshops, hospitals and hotels, especially of health resorts.

5. That to limit the spread of tuberculosis it is necessary that notification by physicians and householders of its existence be made compulsory, thereby enabling health authorities to examine into the sanitary surroundings of those affected and to make provision for the adoption of necessary precautions against infection to the healthy.

6. That municipal inspection of dressed meat and of dairy cattle be systematically carried out, and that the notification of the health authorities by owners of infected animals be made compulsory.

7. That municipal and State governments ought to aid in the work of limiting the disease by the establishment of institutions especially designed for the reception and treatment of the phthisical, and so situated that while minimizing the danger to the general community, they may likewise supply means for outdoor work and exercise suited to the condition of different patients.

PETER H. BRYCE, M. D., Ch'n.
LUCIEN F. SALOMON, M. D.
PROF. V. C. VAUGHAN.

The President announced that the Committee on the Pollution of Rivers would be constituted as follows: Dr. L. F. Salomon of Louisiana, Dr. C. A. Lindsley of Connecticut, Dr. C. N. Metcalf of Indiana, Dr. John H. Rauch of Illinois and Dr. Henry P. Walcut of Massachusetts.

Dr. Bryce, a delegate of the Conference to the International Congress of Forestry, held at Montreal, Quebec, submitted a report.

It was voted to continue all standing committees and request them to report at the next meeting.

Adjourned *sine die*.

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INTER-STATE NOTIFICATION IN INFECTIOUS AND CONTAGIOUS DISEASES.

The following are the resolutions, adopted by the International Conference of Boards of Health, at Toronto, October 6th, 1886.

(*Also presented to and adopted by the American Public Health Association, Oct. 8th*, 1886.)

WHEREAS, It is necessary for the protection and preservation of the public health that prompt information should be given of the existence of cholera, yellow fever and small-pox; be it

1. *Resolved*, That it is the sense of the National Conference of State Boards of Health that it is the duty of each State, Provincia and Local Board of Health in any locality in which said diseases may at any time occur, to furnish immediately information of the existence of such diseases to boards of health of neighboring and provincial States and to the local board in such States as have no State board.

2. *Resolved*, That upon rumor or report of the existence of pestilential disease, and positive definite information thereon not being obtainable from the proper health authorities, this Conference recommends that the health officials of one State shall be privileged and justified to go into another State for the purpose of investigating and establishing the truth or falsity of such reports.

3. *Resolved*, That whenever practicable, the investigations made under the preceding section shall be done with the coöperation of the State or local health authorities.

4. *Resolved*, That any case which presents symptoms seriously suspicious of one of the aforenamed diseases, shall be treated as suspicious, and reported as provided for in cases announced as actual.

5. *Resolved*, That any case respecting which reputable and experienced physicians disagree as to whether the disease is or is not pestilential, shall be reported as suspicious.

6. *Resolved*, That any case respecting which efforts are made to conceal its existence, full history and true nature, shall be deemed suspicious and so acted upon.

7. *Resolved*, That in accordance with the provisions of the foregoing resolutions, the Boards of Health of the United States and Canada represented at this conference do pledge themselves to an interchange of information as herein provided.

In compliance with the above resolutions all cases of cholera, yellow fever and small-pox are reported to the Secretary of the Board of each State. Of the first two, no cases have been reported, but the following States and Province have sent notices of small-pox:

Wisconsin, 13; Tennessee, 8; Massachusetts, 7; Minnesota, 4; North Carolina, 2; Connecticut, 2; Ohio, 1; Iowa, 1; Michigan, 1; Pennsylvania, 1; Province of Quebec 2, with several landed at Grosse Isle Quarantine.

All these cases were reported as quarantined and all proper means taken to prevent its spread.

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Reports of Health Officers.

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QUARTERLY.—(Giving number of cases and deaths.)

ARLINGTON.

November 30, 1890.—Cholera infantum, 5; diphtheria, 2; dysentery, 7; erysipelas, 1; pneumonia, 3; typhoid fever, 5; whooping cough, 1.

February 28, 1891.—Diphtheria, 2; dysentery, 7; erysipelas, 2; measles, 30; phthisis, 4; pneumonia, 8; typhoid fever, 2—death, 1. W. S. Phillips, Health Officer.

ALBANY.

November 30, 1890.—Dysentery, 1; memb. croup, 1; phthisis, 1—death, 1; pneumonia, 3; scarlatina, 1; typhoid fever, 1—stabbed himself, in his delirium, and died of the wound.

February 28, 1891.—Diphtheria, 1; erysipelas, 3; memb. croup, 1; pneumonia, 8; typhoid fever, 1. J. C. Campbell, Health Officer.

ALBURGH.

March 31, 1891.—Cere. spinal meningitis, 1—death, 1; phthisis, 1; puerperal fever, 1.

July 1, 1891.—Cere. spinal meningitis, 1—death 1; puerperal fever, 1; scarlatina, 4. F. L. Ladue, Health Officer.

BETHEL.

May 31, 1891.—Erysipelas, 5.

August 31, 1891.—Cholera infantum, 1; phthisis, 1; typhoid fever, 2. L. M. Greene, Health Officer.

BERKSHIRE.

November 30, 1890.—Cholera infantum, 2; dysentery, 1.

February 28, 1891.—Erysipelas, 3; measles, 15—death, 1. G. S. Goodrich, Health Officer.

BURLINGTON.

September, 1890, to September, 1891.—Cholera infantum, 13; typhoid fever, 7; measles, 5; typh. malarial fever, 1; phthisis, 35; tuberculosis, 9; gastro-enteritis, 4; la grippe, 1. H. A. Crandall, Health Officer.

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CONCORD.

November 30, 1890.—Cholera infantum, 8—deaths, 2; dysentery, 10; erysipelas, 4; measles, 50; scarlatina, 5; typhoid fever, 5; whooping cough, 10.

February 28, 1891.—Diphtheria, 3; dysentery, 1; erysipelas, 4; measles, 15; pneumonia, 3; scarlatina, 10; whooping cough, 5. R. T. Johnson, Health Officer.

GEORGIA.

November 30, 1890.—Cholera infantum, 4—death, 1; phthisis, 1—death, 1; typhoid fever, 1.

February 28, 1890.—Erysipelas, 1; measles, 10; pneumonia, 3. O. G. Stickney, Health Officer.

VICTORY AND GRANBY.

November 30, 1890.—Cholera infantum, 3—death, 1; diphtheria, 1; dysentery, 5; measles, 10; memb. croup, 1—death, 1; scarlatina, 8.

February 28, 1891.—Diphtheria, 2; measles, 60; memb. croup, 1—death, 1; pneumonia, 3; scarlatina, 5. R. T. Johnson, Health Officer.

HINESBURGH.

February 28, 1891.—Diptheria, 1; measles, 15; phthisis, 2—deaths, 2; typhoid fever, 2—death, 1.

May 31, 1891.—Measles, 11; phthisis—deaths, 1. H. E. Hunt, Health Officer.

HUNTINGTON.

November 30, 1890.—Cholera infantum, 2; dysentery, 4; erysipelas, 4; measles, 3; pneumonia, 2; whooping cough, 6.

February 28, 1891.—Dysentery, 2; erysipelas, 3; pneumonia, 3—deaths, 2; whooping cough, 6.

May 31, 1891.—Dysentery, 4; erysipelas, 5; measles, 6; pneumonia, 1; whooping cough, 4. F. D. Falby, Health Officer.

MONTPELIER.

June 30, 1891.—Diphtheria, 52—deaths, 7; measles, 3; scarlatina, 2; typhoid fever, 2.

September 4, 1891.—I enclose, as you requested, the number of deaths from contagious diseases since January 1 to September 1, 1891. Measles, 3; diphtheria, 22. We have, at present, two cases of diphtheria only. D. G. Kemp, Health Officer.

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MIDDLEBURY.

February 28, 1891.—Dysentery (many cases of winter dysentery)—death, 1; phthisis—death, 1; pneumonia—deaths, 2; scarlatina, 2. M. D. Smith, Health Officer.

MONTGOMERY.

November 30, 1890.—Pneumonia, 2; typh. malarial fever, 2.

February 28, 1891.—Diptheria, 9—death, 1; erysipelas, 3; measles, 1; typh. malarial fever, 11—death, 1.

June 1, 1891.—Diphtheria, 3—death, 1; erysipelas, 2; measles, 2; typh. malarial fever, 5—death, 1.

August 31, 1891.—Cere. spinal meningitis, 1—death, 1; cholera infantum, 2—death, 1; diptheria, 5—death, 1; dysentery, 4; erysipelas, 1; puerperal fever, 1; whooping cough, 1. B. W. Davis, Health Officer.

PROCTOR.

February 28, 1891.—Erysipelas, 1; phthisis, 1—death, 1; pneumonia, 6; typhoid fever, 2—deaths, 2.

May 31, 1891.—Cere. spinal meningitis, 2—death 1; erysipelas, 1; phthisis, 1—death, 1; pneumonia, 3; typhoid fever, 1—death, 1.

September 30, 1891.—Cholera infantum, 5—death, 1; dysentery, 1; erysipelas, 1; phthisis, 1—death, 1; typhoid fever, 2. H. L. Newell, Health Officer.

POULTNEY.

November 30, 1890.—Diphtheria, 2; dysentery, 2: erysipelas, 3; phthisis, 1; typhoid fever, 1.

February 28, 1891.—Measles, 8; phthisis, 1; pneumonia, 3. E. D. Ellis, Health Officer.

POWNAL.

November 31, 1890.—Typhoid fever, 1; whooping cough, 5—death, 1.

February 28, 1891.—Memb. croup, 1—death, 1; phthisis, 1—death, 1; pneumonia, 1—death, 1; whooping cough, 5—death, 1.

June 1, 1891.—Pneumonia, 5—death, 1; puerperal fever, 1; typh. malarial fever, 1; whooping cough, 7.

September 30, 1891.—Dysentery, 2—death, 1; measles, 19; pneumonia, 1; typh. malarial fever, 1; whooping cough, 9. J. S. Niles, Health Officer.

RICHMOND.

February 28, 1891.—Memb. croup, 2—deaths 2. C. W. Jacobs, Health Officer.

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SOUTH HERO.

November 30, 1890.—Phthisis, 1; pneumonia, 1; typhoid fever, 7—death, 1.

February 28, 1891.—Dysentery, 1; measles, 10; phthisis, 1—death, 1; typhoid fever, 4.

May 31, 1891.—Cere. spinal meningitis, 1—death, 1; measles, 30; scarlatina, 1. C. W. Petty, Health Officer.

RICHFORD.

November 30, 1890.—Cholera infantum, 4; erysipelas, 5; memb. croup, 1—death, 1; pneumonia, 4; whooping cough, 6. W. S. Manuel, Health Officer.

May 30 and August 31, 1891.—Cholera infantum, 10—deaths, 4; diphtheria, 1; dysentery, 1; measles, 25; phthisis, 4—deaths, 4; pneumonia, 12; puerperal fever, 2; scarlatina, 1. R. M. Pelton, Health Officer.

WEST RUTLAND.

February 28, 1891.—Measles, 2; pneumonia, 6—death, 1. C. B. Ross, Health Officer.

SHELDON.

November 30, 1890.—Diphtheria, 1; dysentery, 1; measles, 4; pneumonia, 1. E. M. Brown, Health Officer.

SWANTON.

June 30, 1891.—Measles, about 200; phthisis, 1; pneumonia, 10; typhoid fever, 2—death, 1. H. R. Wilder, Health Officer.

WARREN.

November 30, 1890.—Measles, 128; pneumonia, 3.

February 28, 1891.—Measles, 75; phthisis, 1; pneumonia, 5.

May 31, 1891.—Measles, 4; phthisis, 1; pneumonia, 3.

August 31, 1891.—Erysipelas, 1; measles, 1; phthisis, 1—death, 1; typhoid fever, 2. O. D. Greene, Health Officer.

WESTFIELD.

November 30, 1890.—Dysentery, 1; erysipelas, 1; phthisis, 2; pneumonia, 4—deaths, 2.

February 28, 1891.—Erysipelas, 1; measles, 2; phthisis, 2; pneumonia, 4, F. S. Gray, Health Officer.

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ST. ALBANS.

ST. ALBANS, Sept. 28, 1891.

J. H. Hamilton, Sec. State Board of Health:

DEAR SIR—I have the pleasure to report an unusual degree of exemption from contagious diseases in this town during the last three or four months. Only two cases of diphtheria have occurred in town since the first of March last. They occurred in little girls aged nine and four respectively, in separate families and were remote from each other. In one of the families they had the disease during the past winter and there is no evidence how it was communicated in the second case. In each of the cases active antiseptic and disinfective measures were adopted, together with strict isolation, as far as practicable, and I am happy to say the disease did not spread even to other members of the same family. I am clearly of the opinion that isolation is our best preventive measure in the management of this most fatal disease. The two cases terminated fatally in about six and nine days respectively.

At this present writing, Sept. 28, there are several cases of typhoid fever. I am not aware that any of the cases have terminated fatally, although of quite a severe type.

I desire again to call your attention to the importance of having some blank reports printed and distributed to each of the physicians, and have the laws so amended that each case reported shall be paid for—a nominal fee, say 25 cents. I fear that many cases that shonld be reported are omitted for the reason of not having suitable and convenient arrangements. I will make further suggestions when I see you. Respectfully yours,

S. S. CLARK.

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List of Health Officers.

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ADDISON COUNTY.

Addison, has none.
Bridport, "
Bristol, H. A. Bogue.
Cornwall, has none.
Ferrisburgh, "
Granville, "
Hancock, "
Leicester, "
Lincoln, has none.
Middlebury, M. D. Smith.
Monkton, O. T. Nimblet.
New Haven, has none.
Orwell, "
Panton, "
Ripton, "
Salisbury, "
Shoreham, "
Starksboro, "
Vergennes, E. W. Shipman.
Waltham, has none.
Weybridge, "
Whiting, "

BENNINGTON COUNTY.

Arlington, W. S. Phillips.
Bennington, John Potter.
Dorset, C. W. Bartlett.
Glastenbury, has none.
Landgrove, "
Manchester, L. Hemenway.
Peru, has none.
Pownal, J. S. Niles.
Readsboro, has none.
Rupert, "
Sandgate, "
Searsburgh, "
Shaftsbury, J. B. Woodhull.
Stamford, has none.
Sunderland, "
Windhall, "
Woodford, "

CALEDONIA COUNTY.

Barnet, has none.
Burke, A. A. Cheney.
Danville, N. C. B. Haviland.
Groton, has none.
Hardwick, S. E. Darling.
Kirby, has none.
Lyndon and Lyndonville, J. W. Copeland.
Newark, has none.
Peacham, L. F. Parker.
Ryegate, J. B. Dailey.
Sheffield, has none.
St. Johnsbury, H. C. Newell.
Stannard, has none.
Sutton, J. W. Colby.
Walden, has none.
Waterford, "
Wheelock, "

CHITTENDEN COUNTY.

Bolton, has none.
Burlington, H. A. Crandall.
Charlotte, W. H. H. Varney.
Colchester, has none.
Essex, "
Hinesburgh, H. E Hunt.
Huntingdon, F. D. Falby.
Jericho, has none.
Milton, "
Richmond, C. W. Jacobs.
Shelburne, F. R. Stoddard.
Underhill, A. F. Burdick.
Westford, F. S. Gross.
Williston, "

ESSEX COUNTY.

Averill, has none.
Bloomfield, "
Brighton, E. F. Norcross.

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Brunswick, has none.
Canaan, "
Concord, R. T. Johnson.
East Haven, has none.
Ferdinand, "
Granby, "
Guildhall, N. S. Boyce.
Lemington, has none.
Lunenburgh, H. A. Cutting.
Maidstone, has none.
Norton, "
Victory, "

FRANKLIN COUNTY.

Bakersfield, W. H. Giddings.
Berkshire, G. S. Goodrich.
Enosburg, W. R. Hutchinson.
Fairfax and Fletcher, C. F. Hawley.
Fairfield, W. G. E. Flanders.
Franklin, J. B. Hall.
Georgia, O. G. Stickney.
Highgate, E. A. Bates.
Montgomery, B. W. Davis.
Richford, R. M. Pelton.
Sheldon, E. M. Brown.
St. Albans, S. S. Clark.
Swanton, H. R. Wilder.

GRAND ISLE COUNTY.

Alburgh, Fred La Due.
Grand Isle, B. Haynes.
Isle La Motte, M. J. Hyde.
North Hero, has none.
South Hero, C. W. Petty.

LAMOILLE COUNTY.

Belvidere, has none.
Cambridge, J. B. Morgan.
Eden, H. W. Bacon.
Elmore, has none.
Hyde Park, "
Johnson, Joel Allen.
Morristown, C. C. Rublee.
Stowe, M. L. Burnett.
Waterville, has none.
Wolcott, "

ORANGE COUNTY.

Bradford, J. H. Jones.
Braintree, has none.
Brookfield, has none.
Chelsea, S. M. Goss.
Fairlee, has none.
Newbury, "
Orange, "
Randolph, A. C. Bailey.
Strafford, has none.
Thetford, "
Topsham, "
Tunbridge, "
Vershire, "
Washington, "
West Fairlee, "
Williamstown, E. B. Watson.

ORLEANS COUNTY.

Albany, J. C. Campbell.
Barton Landing, E. O. Ranney.
Barton, M. F. Prime.
Brownington, W. F. Gilman.
Charleston, (West) C. S. Hinman.
Coventry, F. D. Badger.
Craftsbury, C. W. Dustan.
Derby, E. W. Clark.
Glover, has none.
Greensboro, F. C. Kinney.
Holland, C. S. Hinman, (West Charleston).
Irasburgh, Wm. Rowell.
Jay and Westfield, F. S. Gray.
Newport, J. H. Gaines.
Troy, F. C. Comings.
Westmore, has none.

RUTLAND COUNTY.

Benson, has none.
Brandon, C. W. Peck.
Castleton, has none.
Chittenden, "
Clarendon, "
Danby, "
Fair Haven, "
Hubbardton, "
Ira, "
Middletown, "
Mount Tabor, "
Mount Holly, "
Pittsfield, "
Pittsford, C. A. Flanders.
Pawlet, has none.

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Poultney, E. D. Ellis.
Proctor, H. L. Newell.
Rutland, J. C. Keenan.
Sherburne, has none.
Shrewsbury, "
Sudbury. "
Tinmouth, "
Wallingford, "
Wells, "
West Haven, "
West Rutland, C. B. Ross.

WASHINGTON COUNTY.

Barre, C. F. Camp.
Berlin, has none.
Cabot, "
Calais, "
Duxbury, "
E. Montpelier, "
Fayston, "
Marshfield, "
Middlesex, "
Montpelier, D. G. Kemp.
Moretown, J. Haylett.
Northfield, J. H. Winch.
Plainfield, has none.
Roxbury, "
Waitsfield, H. T. J. Howe.
Warren, O. D. Green.
Waterbury, W. F. Minard.
Woodbury, has none.
Worcester "

WINDHAM COUNTY.

Athens, has none.
Brookline, "
Brattleboro, A. J. Miller,
Dover, has none.
Dummerston, "
Grafton, "
Guilford, "
Halifax, "
Jamaica, "
Londonderry, "
Marlboro, "
Newfane, "
Putney, E. S. Munger.
Rockingham, has none.
Somerset, "
Stratton, "
Westminster, "
Whitingham, "
Wilmington, "
Windham, "

WINDSOR COUNTY.

Bethel, L. M. Greene,
Barnard, A. Jewett.
Cavendish, E. M. Shurtleff.
Chester, W. L. Havens.
Hartford, J. A. Day.
Hartland, D. F. Rugg,
Ludlow, Henry E. Lane.
Norwich, S. H. Currier.
Plymouth, C. A. Scott.
Reading, F. C. Morgan.
Rochester, W. D. Huntington.
Royalton, Wm. H. Gerrish.
Sharon, A. C. Sherwin.
Weston, H. H. Howe.
Windsor, J. D. Brewster.
Woodstock, M. H. Chandler.

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